



2024 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995
Local Air Quality Management, as amended by the
Environment Act 2021

Date: June, 2024

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Executive Summary: Air Quality in Our Area

Air Quality in Warwick District Council

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year¹.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution².

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

Table ES 1 - Description of Key Pollutants

Pollutant	Description
Nitrogen Dioxide (NO ₂)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO ₂)	Sulphur dioxide (SO ₂) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM ₁₀ and PM _{2.5})	<p>Particulate matter is everything in the air that is not a gas.</p> <p>Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes.</p> <p>PM₁₀ refers to particles under 10 micrometres. Fine particulate matter or PM_{2.5} are particles under 2.5 micrometres.</p>

¹ UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

² Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

The main pollutants of concern in Warwick District are nitrogen dioxide and particulate matter. These pollutants are predominantly associated with road traffic emissions particularly on busy roads and in areas where traffic queues regularly. The main concern is centred on housing that is in close proximity to main traffic routes with high levels of queuing traffic, particularly around busy junctions and traffic lights. Current hotspots include W13, a high-traffic intersection in Leamington Spa.

Recent years' NO₂ diffusion tube and automatic station monitoring results show that, whilst there are fluctuations (predominantly due to the Covid-19 lockdowns), there is a general decline in levels of nitrogen dioxide and levels of PM₁₀ and no monitoring locations exceed the national standards in 2023.

Warwick District Council continues to work closely with neighbouring authorities, Warwick County Council and Government Agencies to address poor air quality.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan³ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter (PM_{2.5}), the pollutant of most harmful to human health. The Air Quality Strategy⁴ provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

- The Road to Zero⁵ details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas

³ Defra. Environmental Improvement Plan 2023, January 2023

⁴ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

⁵ DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

(AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Warwick District Council continued to implement and pursue measures to improve air quality during 2023. Key completed measures are as follows:

- Following year on year improvement in air quality, 3 of 5 AQMAs have now been revoked namely Kenilworth New Street AQMA, Kenilworth Warwick Road AQMA and Warwick Coventry Road AQMA.
- Procurement of 3 real-time air quality sensors to be placed within the Leamington Spa AQMA
- The new Coventry Rd Cycle Scheme has been completed. This scheme is part of WDC's programme of new cycle route developments to make it easier for people to cycle for short local journeys, helping to tackle congestion, improve air quality, reduce carbon emissions, and support an increase in physical activity.

Conclusions and Priorities

Site W13, a monitoring location within the Leamington Spa AQMA which has exceeded air quality standards for many years, is now compliant with an annual average of $36.8\mu\text{g}/\text{m}^3$.

With the exception of 2020 and 2021 when Covid impacted on travel, all diffusion sites show a downward trend in annual average results. This has resulted in the revocation of 3 of the 5 AQMAs in Warwick District and allows resources to be focussed on the remaining 2. Should the downward trend continue, it may be possible to revoke the Warwick AQMA as levels have been compliant for the previous 4 years.

Warwick District Council's (WDC's) existing Air Quality Action Plan (AQAP) is over 5 years old. As such, WDC is currently developing an updated AQAP following completion of an updated source apportionment study.

Local Engagement and How to get Involved

All Warwick District Council residents can help to improve air quality in the borough by choosing sustainable travel alternatives such as walking, cycling or using public transport.

Warwickshire and Coventry have an ongoing carsharing programme, available online via the [Carshare Warwick website](#).

All enquiries pertaining to air quality should be directed to the Environmental Protection Section, either by email (pollution@warwickdc.gov.uk) or by phone (01926 456725).

An air pollution page is available on the [Council website](#), all statutory reports and up to date information is uploaded to, and presented within this page. Additionally, the [Active Travel website](#) is available to provide information on sustainable modes of transport within the district. Information and maps showing the [locations of EV charging points](#) are also now available on the Council's website.

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Protection Department in the Safer Communities, Leisure and Environment Service of Warwick District Council.

This ASR has been approved by:

Name	Position	Date	Signature
Cllr Jim Sinnott	Portfolio Holder – Safer Healthier Communities.	4/6/24	Jim Sinnott

This ASR has been reviewed by a Director of Public Health.

If you have any comments on this ASR please send them to Frances Taylor at:

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1 Local Air Quality Management

This report provides an overview of air quality in Warwick District Council during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Warwick District Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

A summary of AQMAs declared by Warwick District Council can be found in Table 2.1. The table presents a description of the two remaining AQMA(s) that are currently designated within Warwick District Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA(s) and also the air quality monitoring locations in relation to the AQMA(s). The air quality objectives pertinent to the current AQMA designation(s) are as follows:

- NO₂ annual mean; and
- NO₂ 1-hour mean.

Warwick District Council have recently revoked three AQMAs, namely:

- Kenilworth New Street AQMA (Order no.5)
- Kenilworth Warwick Road AQMA (Order no.4)
- Warwick Coventry Road AQMA (Order no.7)

Following a review and assessment of air quality in the Warwick and Leamington areas (more information is available in [appendix F](#)) and a direction from Defra, nitrogen dioxide levels have been shown to be consistently below the national standard for the last four years. As such, it was agreed at full cabinet that these AQMAs should be revoked to allow the Council to focus its efforts on improving the air quality in the remaining two AQMAs. As of 15th March 2024, they were revoked.

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
Leamington Spa AQMA	Dec-04 Amended 2014	NO ₂ Annual Mean	An area of South Town, Leamington Spa, centred on High Street, Clemens Street and Bath Street.	NO	52.9µg/m ³	36.8µg/m ³	1 year	Air Quality Action Plan: Warwick District Council. Published June 1st 2015. Currently being revised.	Visit the AQAP for the Leamington Spa AQMA
Warwick AQMA	Dec-04 Amended 2008	NO ₂ Annual and 1-Hour Mean	An area in the centre of Warwick, encompassing properties along High Street, Jury Street, Bowling Green Street, Theatre Street, Northgate, The Butts, Smith Street, Church St and part of Saltisford, and also including a number of nearby properties.	NO	58.3µg/m ³	29.3µg/m ³	4 years	Air Quality Action Plan: Warwick District Council. Published June 1st 2015. Currently being revised.	Visit the AQAP for the Warwick AQMA

- Warwick District Council **confirms the information on UK-Air regarding their AQMA(s) is up to date.**
- Warwick District Council **confirms that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Warwick District Council

Defra's appraisal of last year's ASR concluded that the report was acceptable but should be signed by the Director of Public Health.

Warwick District Council has taken forward a number of direct measures during the current reporting year of 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 33 measures are included within Table 2.2, with the type of measure and the progress Warwick District Council have made during the reporting year of 2023 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans. Key completed measures are:

- OZEV funding has enabled the delivery of 26 twin-headed charging points in off-street car parks within Leamington, Warwick and Kenilworth.
- The 'Choose How You Move in Warwick District' programme, in conjunction with Betterpoints, is continuing and has been expanded to include rewards for participants making active and sustainable travel choices across the District.
- The feasibility study for potential Park and Ride locations has been completed and the 500 space Park and Ride at Europa Way is in the design stage.
- The new Coventry Rd Cycle Scheme has been completed. This scheme is part of WDC's programme of new cycle route developments to make it easier for people to cycle for short local journeys, helping to tackle congestion, improve air quality, reduce carbon emissions, and support an increase in physical activity.

Warwick District Council expects the following measures to be completed over the course of the next reporting year:

- Further funding has been secured from the LEP which will allow charging points to be introduced in on-street locations within the district. The on-street locations are currently being finalised.
- 3 Airly air quality sensors are currently being installed in the Leamington Spa AQMA. This will provide real-time data for NOx and particulate matter.

- Completion of the new AQAP in partnership with WDC stakeholders.

Warwick District Council's priorities for the coming year are:

- Completion of the new AQAP in partnership with WDC stakeholders.
- Focus measures on the Leamington Spa AQMA. The real-time sensors will provide more detailed information.

Warwick District Council worked to implement these measures in partnership with the following stakeholders during 2023:

- Warwickshire County Council
- Clean Air Warwickshire

The principal challenges and barriers to implementation that Warwick District Council anticipates facing are limitations of funding and capacity of staff to implement projects.

Progress on some measures has been slower than expected due to a lack of resources and funding. See Table 2.2 for further details.

Warwick District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in the remaining two AQMAs, namely Leamington Spa AQMA and Warwick AQMA.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
<Example 1:>	Provision of Outer Distributor Road linking A1 To B23	<Select from the available categories>	<Select from the available classifications>	<2019>	<2030>	<Local Authority Environmental Health, Local Authority Transport Dept, County Council. >	<DfT, County Council, Private sector>	<No>	<Partially funded>	>£10 million	<Planning>	<Significantly reduce levels of HGVs, X µg/m³ reduction, achievement of NO₂ annual mean air quality objective>	<Traffic count, measured concentration at X>	<A feasibility study has been completed and report shared with xxx Transport Strategy Members.>	<Phase 1 delivered through private sector development. Further funding required>
<Example 2:>	Encourage the use of electric vehicles by providing public charging points	<Select from the available categories>	<Select from the available classifications>	<->	<2025>	<Local Authority Environmental Health, Local Authority Transport Dept. >	<Defra and LA>	<Yes>	<Partially funded>	<£50k - £100k>	<Implementation>	<Estimated to be less than 1µg/m µg/m³ based on a low to medium uptake >	<Measure usage of local authority controlled points>	<Phase 1 of the expansion is complete. Phase 2 expansion of the network is ongoing>	<Poor grid capacity out of main town centre is an inhibitor to rapid charging>
<Example 3:>	Promote green waste services and discourage use of bonfires	<Select from the available categories>	<Select from the available classifications>	<->	<2024>	<Local Authority Environmental Health, Local Authority Waste Dept. >	<N/A>	<No>	<Funded>	<£10k>	<Implementation>	<Reduced emissions from outdoor burning>	<Sign up rate, measured concentration at X, tonnage green waste collected and formal actions on waste related burning>	<Implementation on-going, 12k signed up for garden waste collection, regular publicity continues>	<Full evaluation to take place September 2024>
1	Area wide improvements to walking and cycling infrastructure	Promoting Travel Alternatives	Promotion of Cycling and Promotion of Walking	Ongoing	Ongoing implementation of schemes	WCC	WCC, possible CIL contribution to some schemes, Getting Building Fund	NO	-	-	Implementation	Reduced emissions from private vehicle use	n/a	1. Europa Way Corridor Improvements commenced in May 2018 and are ongoing. 2. Shared use cycle path created on Priory Road, Warwick. 3. Traffic model developed for a two way cycle link between Leamington Spa and Warwick along Emscote Road with funding now secured for this scheme. 4. Works have been completed at Northgate, Warwick to improve pedestrian routes between Warwick railway station and the town centre. 5. Bicycle hire/share scheme is being explored that could serve Leamington Spa railway station, Warwick Technology Park, and Heathcote Industrial Estate.	Europa Way corridor improvements are ongoing with section between Tachbrook Park Road and Olympus Avenue now open. Feasibility work on Harbury Lane connections, including to new school site, is being carried out in 2021/22. Funding has been secured from Getting Building Fund through the CVLEP to deliver the following new schemes / upgrades of existing schemes during 2021/22: Stratford Rd & Shakespeare Ave Warwick, Vittle Drive Warwick, Coventry Rd Warwick including link to Woodloes, St Nicholas Park Warwick, Kenilworth Road Leamington Spa. The Stanks Island scheme in Warwick is complete including improved cycle connectivity
2	Smarter Choices and Travel Planning programme	Promoting Travel Alternatives	School Travel Plans and Workplace Travel Planning	Ongoing	Ongoing implementation of schemes	WCC	WCC, DfT	NO	-	-	Implementation	Reduced emissions from private vehicle use	n/a	1. Engagement with large employers at Warwick Technology Park in relation to active travel. A lift share scheme introduced	WCC's Road Safety Education continue to engage with employers and schools to promote active travel in partnership with road safety initiatives.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
														by local employer Wolesey has proved to be successful, with significant uptake by employees. WCC have since taken this example of a successful scheme to the Coventry and Warwickshire LEP and have promoted the concept to other local companies. 2. Active travel website is operational and being maintained.	Funding has been secured for 2 x Safe and Active Travel Officers, who have recently been appointed
3	Targeted bus stop infrastructure upgrades on key public transport corridors	Transport Planning and Infrastructure	Bus Route Improvements	Ongoing	Ongoing implementation of schemes	WCC	WCC, DfT	NO	-	-	Implementation	n/a	n/a	Feasibility work undertaken on some corridors	WCC has been successful in obtaining funding from DfT for electric buses to be introduced on cross boundary routes between Warwick, Leamington and Coventry. The initiative is part of a wider project to introduce all electric buses within Coventry by 2024/25. The introduction of electric buses will be supported by some bus priority measures along the corridor. This project could also provide opportunities for bus charging infrastructure to be installed within the District.
4	Improving infrastructure to improve walking and cycling signage	Promoting Travel Alternatives	Promotion of Cycling and Promotion of Walking	Ongoing	Ongoing implementation of schemes	WCC	WCC	NO	-	-	Planning	Reduced emissions from private vehicle use	n/a	1. New signage nodes installed in Leamington Spa town centre and railway station in May 2018 showing walking routes/times. Signages nodes at Warwick and Warwick Parkway railway stations also now in place. 2. Bike hire/share scheme being explored to serve Leamington Railway station and large employment sites such as Warwick Technology Park and Heathcote Industrial Estate.	Options for a bike share scheme are still being explored by WDC in conjunction with Stratford DC and WCC.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
5	Hearts and Minds campaign to encourage modal shift away from private car use	Public Information	Other	Ongoing	Ongoing campaigns	WCC	WCC, grant funding where available	NO	-	-	Implementation	Reduced emissions from private vehicle use	n/a	1. The 'Choose how you move' (CHYM) Active Travel campaign is continuing. The campaign has also been expanded in Leamington Spa where WDC, in partnership with WCC, have set up a rewards programme using the 'BetterPoints' app. The scheme encourages walking, cycling and use of public transport in Leamington by allowing users to log their green travel in return for BetterPoints that are then redeemable on the high street. 2. Warwickshire Public Health secured funding for 50 personal air quality monitors and an initial project was carried out looking at air quality awareness and impact on travel behaviours.	The 'Choose How You Move in Warwick District' programme, in conjunction with Betterpoints, is continuing and has been expanded to include rewards for participants making active and sustainable travel choices across the District.
6	Further consideration of Park and Ride	Alternatives to private vehicle use	Bus based Park and Ride	Ongoing	Unknown at this time	WCC	WCC	NO	-	-	Planning	Reduced emissions from private vehicle use	n/a	1. Park and Ride facilities outlined in key transport corridor proposals. 2. 500 space park and ride scheme at Europa Way has been committed and is required to be developed prior to occupation of residential development along this corridor. 3. A park and ride at Blackdown (North of Leamington Spa) is included in local plan and on Community Infrastructure Levy (CIL) list. 4. Warwickshire County Council commissioning works to explore park and ride facilities to the North and South of Leamington Spa.	The Park and Ride feasibility report has been completed and identifies a number of Park and Ride and Park and Stride sites in and around Warwick and Leamington that could be introduced. Some of the assumptions may need to be reviewed in light of future working patterns for key employers in the area post-Covid

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
7	Publicising CarShare Coventry and Warwickshire	Alternatives to private vehicle use	Car and lift sharing schemes	Ongoing	Ongoing	WCC	WCC	NO	-	-	Implementation	Reduced emissions from private vehicle use	n/a	1. Active Travel website publicising car sharing opportunities. Following the success of the Wolseley car share scheme WCC have presented to the Cov and Warks LEP with a view to expanding the scheme to other local employers. 2. Signage in Leamington Spa and Warwick being explored to further promote scheme.	Limited scope for impact at the current time while the Covid-19 situation has led to increased home working and a reduction in the number of employees commuting to workplaces.
8	Supporting future opportunities for funding for Low Emission Vehicles, in particular for vehicle charging infrastructure	Promoting Low Emission Transport	n/a	Ongoing	Ongoing implementation	WDC / WCC	WCC, OLEV grant	NO	-	-	Implementation	Reduced emissions from private vehicle use	n/a	WCC currently developing an Electric Vehicle Charging Strategy. OLEV funding secured for approximately 100 twin-headed charging points to be installed across Warwickshire. WCC have introduced electric vehicles for their pool fleet (four vehicles)	OZEV funding has enabled delivery of 26 twin headed charging points in off-street car parks within Leamington, Warwick and Kenilworth. Further funding has been secured from the LEP which will allow charging points to be introduced in on-street locations within the District. The on-street locations are currently being finalised.
9	Use of the planning system to ensure a more widespread infrastructure for low emission vehicles	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing	Ongoing implementation	WDC	WDC	NO	-	-	Implementation	Reduced emissions from private vehicle use	n/a	Implementation of Low Emission Strategy Guidance, and more recently WDC's Air Quality Supplementary Planning Document which was adopted by WDC in 2019.	EV infrastructure continues to be sought and implemented as part of the planning process and in line with the Air Quality SPD.
10	Moving the Warwick DC fleet to electric vehicles where practicable	Promoting Low Emission Transport	Public Vehicle procurement	Ongoing	Vehicles in place as of 2016. Ongoing commitment where feasible	WDC	WDC, grant funding	NO	-	-	Implementation	Reduced emissions from WDC vehicles	n/a	Five vehicles ordered as pool vehicles	A further electric vehicle has been added to the WDC fleet bringing the total number of vehicles to 6. Options for adding a further two vehicles are also being considered.
11	Strive to set up an Ecostars scheme in Warwick District Council whereby fleet operators can join for free and strive to reduce their environmental impacts.	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	TBC	Subject to grant funding	WDC	Grant funding if available	NO	-	-	Aborted	Reduced emissions from fleet vehicles	n/a	Not taken forward yet – no grant funding available	No Update

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
12	Working with Warwickshire County Council and bus operators to encourage lower emission buses (either retrofitting existing buses or use of alternative fuels).	Vehicle fleet efficiency	Promoting Low Emission Public Transport	Ongoing	Subject to grant funding	WCC, DfT, WDC	Grant funding from DfT and £300,000 from WDC via S106	NO	-	-	Implementation	Reduced emissions from bus operator fleet	n/a	1. Meetings held with bus providers in the Warwick district. Obtained details on composition of vehicle fleet and have identified eight Euro 4 buses that are eligible for retrofitting. 2. Initial discussions with local bus providers and bus manufacturers on possibility of trialling an electric bus route through the Leamington Spa AQMA. An initial electric bus funding bid was submitted in 2018 but was unsuccessful. Coventry City Council have since applied for funding under the 'all electric bus town' scheme and cross-boundary routes between Coventry and Warwickshire are being considered as part of the bid, a business case will be developed over the coming months. If the bid is successful there is potential for routes between Coventry and the towns within Warwick District to become electric. It would also provide opportunities for bus charging infrastructure to be installed within the District	WCC successfully submitted a bid with CCC to introduce electric buses on cross-boundary routes between Coventry and Leamington/Warwick. The electric buses will be introduced by 2024/25. WCC and WDC have also secured funding for electric buses on a route at Gateway South.
13	Ensuring that the electric taxi within Warwick District Council is utilised to promote Low Emission Vehicles to commercial operators and the public.	Promoting Low Emission Transport	Taxi emission incentive	Ongoing	n/a	WDC		NO	-	-	Aborted	Reduced emissions from private vehicle use	n/a	Not feasible as taxi is privately owned	No update
14	Promotion of electric vehicles through the Warwickshire Drive Electric Website. http://www.warwickshire.gov.uk/driveelectric	Promoting Low Emission Transport	Other	Ongoing	Ongoing implementation	WCC	WCC	NO	-	-	Implementation	Reduced emissions from private vehicle use	n/a	Website is updated and maintained.	Ongoing. WDC website includes links to maps showing the locations of EV charging points in the District

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
15	Use the taxi and private hire licensing system to try and reduce emissions from taxis and private hire vehicles.	Promoting Low Emission Transport	Taxi emission incentive	Ongoing	To be confirmed	WDC	WDC, grant funding	NO	-	-	Planning	Reduced emissions from private hire vehicles	n/a	Preliminary review of WDC licensed taxi fleet completed in November 2017. Explored possibility of a county-wide taxi euro emission licensing policy through the Coventry and Warwickshire Air Quality Alliance, however, limited interest from neighbouring local authorities.	An electric taxi project is currently underway with a view to introducing electric charging infrastructure for taxis and incentives to encourage taxi drivers to make the switch to electric vehicles.
16	Investigation with procurement colleagues to produce a sustainable procurement guide to ensure transport emissions are as low as possible	Policy Guidance and Development Control	Sustainable Procurement Guidance	TBC	2018	WDC (Procurement)	WDC	NO	-	-	Planning	Reduced emissions from WDC vehicles	n/a	WDC declared a Climate Emergency in 2019 which includes a commitment to becoming a net-zero carbon organisation by 2025, including all contracted out services. It is expected that sustainable procurement will be considered as part of a Climate Emergency Action Programme and that this will impact positively on local air quality at the same time as reducing carbon emissions.	Ongoing
17	Ensuring that the Warwick Low Emission Strategy Guidance for Developers is kept up to date, and implemented	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing	Ongoing	WDC	WDC	NO	-	-	Implementation	Reduced emissions from private hire vehicles And reduced particulate emissions from developments within the district	n/a	1. Good progress in implementing mitigation through development control. 2. WDC's Low Emission Strategy Guidance has been superseded by an Air Quality SPD which is now being implemented.	The SPD makes similar requirements of developers to those made under the previous guidance but with some changes. Additional trigger criteria have been added for major developments which must now be considered when determining the classification of a proposed development, and therefore the level of assessment and mitigation required. Also, a requirement for construction emission control measures, including non-road mobile machinery (NRMM) controls, is now included where type 2 mitigation is necessary.

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
18	Working with planning policy colleagues to ensure that the Local Plan fully addresses air quality issues with appropriate policies included	Policy Guidance and Development Control	Other policy	Ongoing	Ongoing	WDC	WDC	NO	-	-	Completed	n/a	n/a	Planning policy relevant to air quality included in new Local Plan	Ongoing
19	Working with planning colleagues and developers to ensure that new developments are based around the 'five-minute walkable neighbourhood', thereby encouraging active travel as the preferred methods of transport to access local facilities	Policy Guidance and Development Control	Other policy	Ongoing	Ongoing encouragement of active travel	WCC Public Health	WCC Public Health	NO	-	-	Implementation	n/a	n/a	Five minute walkable neighbourhoods have been investigated within work undertaken by WYG on how developments should look	Ongoing
20	Ensure that green infrastructure is integrated into all residential and commercial developments, in line with the National Planning Policy Framework (NPPF)	Policy Guidance and Development Control	Other policy	Ongoing	Ongoing	WDC	WDC	NO	-	-	Implementation	n/a	n/a	NPPF followed for new development. Green infrastructure included where relevant	Ongoing
21	Ensuring that planning applications with potential air quality impacts are fully assessed for their impacts, at relevant locations using appropriate methodologies	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing	Ongoing	WDC	WDC	NO	-	-	Implementation	n/a	n/a	Air quality assessments asked for on a regular basis and mitigation sought where necessary	Ongoing
22	Ensuring that where possible, cumulative impacts are taken into account. Any committed developments should be included within a given air quality assessment	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing	Ongoing	WDC	WDC	NO	-	-	Implementation	n/a	n/a	Ongoing work required where large areas of development are allocated in Local Plan. Potential cumulative impacts raised at pre-application and outline planning application stages as necessary.	Ongoing
23	Ensuring that appropriate mitigation is implemented where any relevant impacts are identified	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing	Ongoing	WDC	WDC	NO	-	-	Implementation	n/a	n/a	Mitigation asked for on a regular basis as part of the Low Emission Strategy (superseded in 2019 by WDC's Air Quality SPD).	Ongoing

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
24	Junction improvements on key travel corridors in Warwick and Leamington Spa AQMAs are proposed which include junction/ highway modifications, improvements for walking and cycling and bus priority measures	Traffic Management	Strategic Highway Improvements	Ongoing	Ongoing for different corridors, Europa Way works commenced in 2018 and are continuing.	WCC (Transport)	WCC (Transport) / CIL contribution	NO	-	-	Implementation	Reduced emissions from queuing vehicles	n/a	Good progress on planning and starting to implement corridor proposals. Work on the Europa Way corridor has begun and is ongoing. A scheme to address air quality issues in the Bath Street, Leamington area is being developed. Options include priority measures for buses, traffic management proposals to reduce queuing traffic in and around the Bath Street area, and improved connectivity for pedestrians and cyclists.	Two proposals for the Bath Street scheme have been developed. Option assessment will include impact on air quality using Ricardo air quality modelling tool alongside traffic modelling.
25	An investigation of 20 mph zones as part of the wider transport strategy, where this will smooth traffic flow	Traffic Management	Reduction of Speed Limits, 20 mph zones	Ongoing	2022	WCC (Transport)	WCC (Transport)	NO	-	-	Implementation	Reduced emissions from queuing vehicles	n/a	Good progress	No update
26	Targeted re-allocation of road space to prioritise and facilitate movement of pedestrians, cyclists, public transport and car share users	Traffic Management	Strategic Highway Improvements	Ongoing	Ongoing for different corridors, Europa Way works commenced in 2018 and are continuing. Shared use cycle link completed on Priory Road, Warwick which is to be expanded to Northgate, Eastgate, Westgate, St. Johns, and Emscote Road	WCC (Transport)	WCC (Transport)	NO	-	-	Implementation	Reduce emission from private vehicle use	n/a	Good progress on planning and starting to implement corridor proposals. Northgate pedestrian improvement works were completed in 2019 and funding has been secured to complete the remainder of the planned Warwick town centre works which will act to make movement easier for pedestrians and cyclists. All of the remaining works planned for Warwick, including junction improvements at Eastgate and Westgate and the introduction of one-way routing in some areas, are expected to go ahead.	Work on the Europa Way corridor is ongoing. Funding secured for Warwick town centre scheme, including road space reallocation to improve pedestrian and cycle facilities

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
27	Manage deliveries across Warwick District Council to ensure that no additional congestion is caused by stationary delivery vehicles in busy locations	Traffic Management	Congestion Management	Ongoing	n/a	WCC (Transport)	WCC (Transport)	NO	-	-	Planning	Reduced emissions from queuing vehicles	n/a	Will review at future Steering Group meetings	No update, ongoing
28	Re-investigate funding for a website to engage with the public on air quality, the health impacts of poor air quality, sustainable transport and strategies to improve air quality	Public Information	Via the internet	Ongoing	Ongoing implementation	WCC Public Health	WCC Public Health	NO	-	-	Implementation	n/a	n/a	Air quality information incorporated into Active Travel website. Further information about air quality and local AQMAs to be included.	Active travel website being progressed by Safe and Active Travel team. Due for launch in 2021
29	Working with planners and developers to embed Public Health's Evidence for Planning guidance, thereby encouraging any new developments to support access to active travel	Policy Guidance and Development Control	Other policy	Ongoing	Ongoing	WCC Public Health	WCC Public Health	NO	-	-	Implementation	n/a	n/a	The guidance document is used when responding to planning applications, pre-planning applications and local plan consultations on an ad-hoc basis.	Ongoing
30	Investigate implementing a campaign aimed at vulnerable members of the public (i.e. those with existing respiratory or cardiovascular conditions) in order that they could change behaviour to reduce exposure when pollution levels are high	Public Information	Via the internet	Ongoing	Ongoing	WCC Public Health	WCC Public Health	NO	-	-	Implementation	n/a	n/a	Instead will embed active travel in everything we do, aimed at whole population	Funding for personal air monitors was secured and an initial project completed.
31	Continuation of monitoring within Warwick District Council, focussed on AQMAs, but also in other strategic locations	n/a	n/a	Ongoing	Ongoing	WDC	WDC	NO	-	-	Implementation	n/a	n/a	Monitoring reported in this report. Three additional diffusion tubes have been installed in and around Castle Hill, Warwick to determine whether the current boundary of the Warwick AQMA should be adjusted. Two further tubes have also been added to the network for the purpose of investigating any temporary air quality concerns, these have been deployed in Dale Street, Leamington since July 2018	Ongoing

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															and are expected to be relocated during 2020.	
32	Regular assessment of air quality against air quality objectives as specified by the LAQM process with reports to Defra and the public	n/a	n/a	Ongoing	Ongoing	WDC	WDC	NO	-	-	Implementation	n/a	n/a	Undertaken in this report		
33	Review of measures set out in this Air Quality Action Plan on a regular basis to ensure they are up to date and being implemented	n/a	n/a	Ongoing	Ongoing	WDC	WDC	NO	-	-	Implementation	n/a	n/a	Undertaken in this report		

2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy⁶, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM_{2.5}). There is clear evidence that PM_{2.5} (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Warwick District Council is taking the following measures to address PM_{2.5}:

Although the existing AQAP and AQMAs focus on reducing NO₂ emissions, the majority of measures will also lead to reductions in PM_{2.5} emissions. Transport sources result in both NO₂ and PM_{2.5} emissions, and in the latter case this is mostly from break and tyre wear. Therefore, any measures that target reducing NO₂ emissions by reducing overall vehicle trips and usage would also lead to a decrease in reducing PM_{2.5} emissions.

Alongside this, the Council continues to monitor and review combustion emissions from industrial processes and domestic appliances, whilst enforcing statutory controls through the use of permitting etc.

The Department of Health's Public Health Outcomes Framework has a number of public health indicators that are used focus public health action, identify areas of health inequality and concern and monitor the differences in health impacts across regions in the UK. This framework includes an indicator "D01- Fraction of Mortality Attributable to Particulate Air Pollution" which is calculated using background annual average PM_{2.5} concentrations, modelled at a 1km² resolution based on measured concentrations from the AURN.

Warwick has a 5.5% fraction of mortality calculated for 2022, which is lower than the average for England at 5.8% and lower than that of the West Midlands Region at 5.7%.

Measures to improve air quality often have shared wins with other public health indicators, a good example being the encouragement of active travel and commuting leading to increased physical activity and increased wellbeing.

⁶ Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

Monitoring of PM_{2.5} is completed at two Automatic Urban and Rural Network (AURN) sites within the District; Leamington Spa Hamilton Terrace (UKA00265) and Leamington Spa Rugby Road (UKA00564), referred to as AURN1 and AURN2 respectively within this report. AURN1 and AURN2 concentrations have generally shown a steady decrease across the last five-year period. However, there was a large reduction in 2020, most likely due to Covid-19 and the restrictions on production processes and travel followed by a rise in 2021 as work and travel patterns began to return to normal. This was in keeping with results across the UK in general.

There are a number of Smoke Control Areas (SCA) within the Council's boundary. In these areas, only authorised and smokeless fuels are allowed to be burnt, unless being used in an exempt appliance. This helps control and reduce PM_{2.5} emissions in these areas. Further information on these, including authorised fuels, can be found on [Warwick District Council's website](#).

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2023 by Warwick District Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Warwick District Council undertook automatic (continuous) monitoring at one site during 2023. Additionally, there are two AURN (automatic monitoring stations) within the district. Table A.1 in Appendix A shows the details of the automatic monitoring sites. Table A.3 presents automatic monitoring results for Warwick, with the AURN monitoring results available through the [UK-AIR website](#). All automatic monitoring data carried out in the district is also available on request from [WeCare4Air](#).

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Warwick District Council undertook non-automatic (i.e. passive) monitoring of NO₂ at 61 sites during 2023. Table A.2 in Appendix A presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

In 2023, all monitoring sites, both automatic and passive, have recorded an annual mean concentration below the objective of 40µg/m³.

No diffusion tube monitoring locations required distance correction, as all sites either reported an annual mean NO₂ concentration below 10% of the annual mean air quality objective for NO₂, in accordance with LAQM TG(22), or is already located at a site of relevant exposure.

Following a review and assessment of air quality in the Warwick and Leamington areas over the last five years, nitrogen dioxide levels have been shown to be consistently below the national standard. As such, it was agreed at full cabinet that these AQMAs should be revoked to allow the council to focus its efforts on improving the air quality in the remaining two AQMAs. As of 15th March 2024, the following AQMAs were revoked:

- Kenilworth New Street AQMA (Order no.5) for NO₂ annual mean.
- Kenilworth Warwick Road AQMA (Order no.4) for NO₂ annual mean.

- Warwick Coventry Road AQMA (Order no.7) for NO₂ annual mean.

With regard to the 1-hour mean NO₂ AQS objective, whereby there should be no more than 18 hourly NO₂ concentrations greater than 200µg/m³, all 3 automatic monitoring stations with the Warwick District AURN1, AURN2 CM1, (Hamilton Terrace in Leamington Spa, Rugby Road in Leamington Spa and Jury St/Pageant House in Warwick) continued to report no exceedances. CM1 reported 25 exceedances in 2019, therefore a decrease in short-term exceedances has been observed but this may again be attributable to the impacts of the COVID-19 pandemic. The designation for the 1-hour mean NO₂ AQS objective Warwick AQMA should therefore remain in place as only four years of compliance has been observed.

3.2.2 Particulate Matter (PM₁₀)

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 40µg/m³.

Table A.7 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

In 2023 there have been no reported exceedances of the annual mean PM₁₀ AQS objective of 40µg/m³ at either of the automatic monitoring sites AURN1 or AURN2. In terms of the 24-hour average PM₁₀ AQS objective of no more than 35 exceedances of 50µg/m³ per year, both AURN sites reported no exceedances. This again is a decrease on the 3 – 4 exceedances reported in 2019.

AURN1 and AURN2 concentrations have generally shown a steady decrease across the last five-year period. However, there was a large reduction in 2020 and 2021 levels also remained lower than expected. This is most likely due to Covid-19 and the restrictions on production processes and travel followed by a rise in 2022 as work and travel patterns began to return to normal. This was in keeping with results across the UK in general. At the continuous monitoring site AURN1 a decrease of 1.8µg/m³ to 11.0µg/m³ and at AURN2, a decrease of 1.3µg/m³ to 10.0µg/m³ was observed compared to 2022.

3.2.3 Particulate Matter (PM_{2.5})

Table A.8 in Appendix A presents the ratified and adjusted monitored PM_{2.5} annual mean concentrations for the past five years.

Monitoring of PM_{2.5} is completed at two Automatic Urban and Rural Network (AURN) sites within the District; Leamington Spa Hamilton Terrace (UKA00265) and Leamington Spa Rugby Road (UKA00564), referred to as AURN1 and AURN2 respectively within this report. AURN1 and AURN2 concentrations have generally shown a steady decrease across the last five-year period. However, there was a large reduction in 2020, most likely due to Covid-19 and the restrictions on production processes and travel followed by a rise in 2021 as work and travel patterns began to return to normal. This was in keeping with results across the UK in general. At the continuous monitoring site AURN1 a decrease of 0.6µg/m³ to 7.03µg/m³ and at AURN2, a decrease of 0.3µg/m³ to 7.03µg/m³ was observed compared to 2022.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
AURN1	Hamilton Terrace, Leamington Spa	Urban Background	431943	265730	NO	No	Chemiluminescence, Ultra-violet fluorescence (UVF), FDMS	9	50	4
AURN2	Rugby Road, Leamington Spa	Roadside	431271	266404	NO ₂ , PM ₁₀ , PM _{2.5}	NO	Chemiluminescence, FDMS	23	8	3.5
CM1	Jury St/Pageant House, Warwick	Roadside	428263	264877	NO ₂	YES – Warwick AQMA	Chemiluminescence	13	2.8	2.4

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable

Table A.2 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
W1	Bath Street	Kerbside	431978	265280	NO ₂	Y - Leamington Spa AQMA	3.4	0.7	No	2.7
W2	High Street	Roadside	432075	265234	NO ₂	Y - Leamington Spa AQMA	0.0	2.2	No	2.7
W5	Hampton Street (3)	Roadside	427615	264563	NO ₂	No	2.4	2.0	No	1.5
W6, W7, W8	Hamilton Terrace	Urban Background	431943	265730	NO ₂	No	9.0	n/a	Yes	3.1
W10	Farley Street	Roadside	432560	265254	NO ₂	No	11.0	0.1	No	2.9
W11	Clemens Street	Roadside	432051	265060	NO ₂	Y - Leamington Spa AQMA	2.0	3.2	No	2.9
W12	Spencer Street	Roadside	431866	265371	NO ₂	Y - Leamington Spa AQMA	2.9	5.0	No	2.8
W13	Wise Street	Roadside	431900	265189	NO ₂	Y - Leamington Spa AQMA	0.0	1.0	No	2.7
W14	Tachbrook Road	Roadside	431862	265169	NO ₂	No	2.9	5.2	No	2.8
W15a	Old Warwick Road	Roadside	431861	265196	NO ₂	No	2.9	0.6	No	2.5
W16	Parade	Roadside	431951	265397	NO ₂	Y - Leamington Spa AQMA	6.3	7.5	No	2.8
W17	Coventry Road (Woodville Road)	Kerbside	428704	265236	NO ₂	No	12.7	1.0	No	1.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
W18	Coventry Road (Coachouse Mews)	Roadside	428735	265362	NO ₂	No	2.3	1.5	No	1.5
W19	West Street Torry's	Roadside	427937	264586	NO ₂	No	6.1	3.2	No	1.5
W23	Moorlands Road Jcn	Roadside	429078	271207	NO ₂	No	8.8	4.2	No	1.5
W24	Waverley Road	Roadside	428974	271402	NO ₂	No	4.7	2.8	No	4.5
W25	New Street No 1	Roadside	428707	272556	NO ₂	No	0.0	0.4	No	1.5
W26	New Street No 2	Roadside	428733	272578	NO ₂	No	0.0	1.7	No	1.5
W27	New Street No 3	Kerbside	428750	272612	NO ₂	No	8.8	1.1	No	4.5
W28	Fieldgate Lane Jcn	Roadside	428652	272524	NO ₂	No	0.0	0.7	No	4.5
W30	The Square	Roadside	428714	271769	NO ₂	No	0.0	3.4	No	4.5
W31	Barrow Road	Kerbside	428816	271618	NO ₂	No	2.1	1.4	No	4.5
W32	Warwick Road	Roadside	428906	271497	NO ₂	No	0.0	1.3	No	1.5
W33, W34, W35	Pageant House	Roadside	428263	264877	NO ₂	Y - Warwick AQMA	13.0	2.8	Yes	1.5
W36	Jury Street	Roadside	428391	264966	NO ₂	Y - Warwick AQMA	10.0	2.1	No	1.5
W37	High Street	Roadside	428132	264799	NO ₂	Y - Warwick AQMA	0.0	2.9	No	1.5
W38	West Street	Kerbside	427959	264624	NO ₂	No	4.5	0.6	No	1.5
W39	Crompton Street/ West Street	Roadside	427910	264541	NO ₂	No	0.0	4.1	No	1.5
W40	Bowling Green Street	Kerbside	427992	264695	NO ₂	Y - Warwick AQMA	0.0	0.9	No	1.5
W41	Friars Street	Roadside	427905	264682	NO ₂	No	1.8	1.0	No	1.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
W42	Theatre Street	Roadside	427938	264947	NO ₂	Y - Warwick AQMA	0.0	2.3	No	4.5
W43	Saltisford/northgate	Roadside	428026	265158	NO ₂	Y - Warwick AQMA	0.0	1.5	No	2.5
W44	West Rock	Roadside	427930	265200	NO ₂	Y - Warwick AQMA	3.6	2.3	No	2.6
W45	Albert Street/saltisford Junction	Roadside	427867	265275	NO ₂	Y - Warwick AQMA	0.0	2.7	No	2.5
W46	The Butts	Roadside	428240	265088	NO ₂	Y - Warwick AQMA	1.9	1.6	No	2.5
W48	Smith Street	Roadside	428522	265039	NO ₂	Y - Warwick AQMA	0.0	2.0	No	3.0
W50	St Nicholas Church Street	Roadside	428600	264983	NO ₂	Y - Warwick AQMA	0.0	1.7	No	2.6
W51	St Marys Churchyard	Urban Background	428270	264982	NO ₂	No	7.8	n/a	No	2.7
W52	Coventry Road, Crown Hotel	Kerbside	428710	265165	NO ₂	No	17.5	1.0	No	2.5
W53	Coventry Road, St Johns (1)	Roadside	428715	265202	NO ₂	No	1.2	1.8	No	2.4
W54	Coventry Road, St Johns (2)	Roadside	428715	265285	NO ₂	No	0.0	1.9	No	2.4

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
W55	Coventry Road, St Johns (3)	Roadside	428710	265341	NO ₂	No	3.3	1.2	No	2.5
W56	St Johns	Roadside	428619	265113	NO ₂	No	0.0	1.1	No	2.5
W57	Coten End	Roadside	428748	265166	NO ₂	No	0.0	3.0	No	2.5
W59	Charles Street	Roadside	429501	265494	NO ₂	No	1.5	2.0	No	2.6
W60	Bridge Street	Roadside	430015	265718	NO ₂	No	6.7	2.4	No	2.6
W62	St Nicholas Church Street (2)	Roadside	428608	265042	NO ₂	Y - Warwick AQMA	0.0	2.1	No	3.0
W67	Castle Hill	Roadside	428477	264939	NO ₂	No	1.2	3.2	No	2.5
W69	Castle Hill (2)	Roadside	428513	264921	NO ₂	No	1.5	2.1	No	2.5
W70	Mill Street	Roadside	428554	264870	NO ₂	No	9.8	3.1	No	2.4
W71	Banbury Road	Roadside	428599	264857	NO ₂	No	20.4	2.1	No	2.5
W72	Dale Street East	Roadside	431464	265903	NO ₂	No	2.9	3.1	No	2.5
W74	Warwick Street	Roadside	431753	260091	NO ₂	No	32.3	1.2	No	2.5
W75	Christchurch Gardens	Kerbside	431714	266269	NO ₂	No	12.8	0.7	No	2.6
W76	Lillington Ave	Kerbside	431720	266739	NO ₂	No	15.5	0.8	No	2.5
W77	Clarendon Street	Roadside	432067	266283	NO ₂	No	1.5	1.7	No	2.5
W78	Newbold Terrace	Roadside	432339	265865	NO ₂	No	35.8	1.4	No	2.5
W79	Radford Road	Roadside	432850	265340	NO ₂	No	10.7	1.6	No	2.5
W80	Leamington Spa Station	Roadside	431710	265223	NO ₂	No	46.8	1.7	No	2.5
W81	Tachbrook Road	Roadside	431840	265090	NO ₂	No	14.3	3.1	No	2.5
W82	Warwick Prep School	Roadside	428854	264601	NO ₂	No	49.1	2.1	No	2.5

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
AURN1	431943	265730	Urban Background	99.0	99.0	17.8	12.8	15	15.7	14.0
AURN2	431271	266404	Roadside	93.0	93.0	16.3	10.6	12.1	13.3	13.0
CM1	428263	264877	Roadside	99.6	99.6	35.6	27.5	33.83	31.3	25.19

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.

Reported concentrations are those at the location of the monitoring site (annualised, as required), i.e. prior to any fall-off with distance correction.

Where exceedances of the NO₂ annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2023.

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.4 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
W1	431978	265280	Kerbside	75	75.0	40.5	33.9	30.5	35.4	28.6
W2	432075	265234	Roadside	100	100.0	35.9	30.3	29.8	33.1	28.1
W5	427615	264563	Roadside	100	100.0	26.5	22.8	20.7	22.8	19.6
W6, W7, W8	431943	265730	Urban Background	100	100.0	17.0	14.1	13.1	14.6	12.5
W10	432560	265254	Roadside	100	100.0	22.0	18.4	17.2	19.7	16.5
W11	432051	265060	Roadside	100	100.0	21.7	17.6	18.0	20.8	15.9
W12	431866	265371	Roadside	100	100.0	30.0	26.3	23.8	28.0	24.6
W13	431900	265189	Roadside	90.4	100.0	45.8	36.8	37.2	42.5	36.8
W14	431862	265169	Roadside	100	90.4	37.9	30.6	30.2	35.4	30.0
W15a	431861	265196	Roadside	100	100.0	38.2	33.2	33.1	37.4	32.6
W16	431951	265397	Roadside	100	100.0	26.3	22.2	21.4	24.1	20.0
W17	428704	265236	Kerbside	90.4	100.0	25.3	20.1	18.3	22.4	18.3
W18	428735	265362	Roadside	100	90.4	22.8	17.7	17.3	20.7	17.0
W19	427937	264586	Roadside	100	100.0	27.3	20.4	24.4	26.1	21.0
W23	429078	271207	Roadside	100	100.0	25.6	18.1	19.7	22.6	18.7
W24	428974	271402	Roadside	92.3	100.0	22.8	19.6	19.2	21.7	18.3
W25	428707	272556	Roadside	100	92.3	25.4	19.6	21.7	23.8	21.4
W26	428733	272578	Roadside	92.3	100.0	21.4	18.1	16.4	18.0	17.2
W27	428750	272612	Kerbside	92.3	92.3	18.1	15.4	14.3	14.8	13.0
W28	428652	272524	Roadside	100	92.3	29.3	22.9	23.8	25.3	22.5
W30	428714	271769	Roadside	100	100.0	20.9	16.2	15.3	18.4	14.8
W31	428816	271618	Kerbside	100	100.0	28.4	22.5	20.0	24.7	20.8
W32	428906	271497	Roadside	100	100.0	28.8	23.1	21.6	24.6	21.6
W33, W34, W35	428263	264877	Roadside	100	100.0	34.5	27.7	26.7	31.5	28.8
W36	428391	264966	Roadside	100	100.0	37.7	28.8	28.0	30.9	26.8
W37	428132	264799	Roadside	100	100.0	31.3	25.4	25.9	28.7	25.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
W38	427959	264624	Kerbside	92.3	100.0	30.7	25.4	20.1	26.1	22.4
W39	427910	264541	Roadside	84.6	100.0	23.2	19.4	19.7	21.5	18.4
W40	427992	264695	Kerbside	100	92.3	35.7	27.3	26.4	30.0	26.3
W41	427905	264682	Roadside	100	84.6	21.3	26.0	16.2	19.1	16.0
W42	427938	264947	Roadside	100	100.0	28.3	21.1	21.1	22.2	19.4
W43	428026	265158	Roadside	100	100.0	40.9	30.1	31.0	33.1	29.4
W44	427930	265200	Roadside	75	100.0	25.3	20.7	19.9	23.5	19.9
W45	427867	265275	Roadside	100	100.0	25.2	19.9	19.3	21.9	18.6
W46	428240	265088	Roadside	100	75.0	27.9	23.5	23.6	26.5	24.6
W48	428522	265039	Roadside	100	100.0	30.5	22.7	23.2	26.1	23.4
W50	428600	264983	Roadside	90.4	100.0	24.5	19.9	19.0	23.4	18.9
W51	428270	264982	Urban Background	82.7	100.0	15.6	11.7	11.4	13.4	11.3
W52	428710	265165	Kerbside	92.3	90.4	32.5	29.0	31.6	35.8	31.3
W53	428715	265202	Roadside	100	82.7	34.7	28.5	27.6	32.5	27.1
W54	428715	265285	Roadside	100	92.3	28.9	23.0	21.8	25.2	21.7
W55	428710	265341	Roadside	100	100.0	24.9	21.1	18.6	22.4	18.5
W56	428619	265113	Roadside	100	100.0	20.3	15.9	15.2	16.9	15.2
W57	428748	265166	Roadside	100	100.0	26.0	21.9	20.2	24.4	20.3
W59	429501	265494	Roadside	92.3	100.0	30.6	27.1	25.1	29.6	24.7
W60	430015	265718	Roadside	92.3	100.0	25.4	22.5	20.7	23.9	20.9
W62	428608	265042	Roadside	40.4	92.3	37.9	31.4	30.2	34.4	29.3
W67	428477	264939	Roadside	100	92.3	39.4	31.6	32.0	37.1	31.9
W69	428513	264921	Roadside	92.3	40.4	35.7	25.8	28.0	30.6	25.8
W70	428554	264870	Roadside	92.3	100.0	25.6	20.0	20.9	22.3	21.2
W71	428599	264857	Roadside	82.7	92.3	32.4	24.4	24.1	29.0	25.7
W72	431464	265903	Roadside	92.3	92.3	29.1	24.1	23.2	26.1	19.6
W74	431753	260091	Roadside	100	82.7					29.1
W75	431714	266269	Kerbside	25	92.3					21.2
W76	431720	266739	Kerbside	65.4	100.0					20.9
W77	432067	266283	Roadside	76.9	25.0					19.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
W78	432339	265865	Roadside	75	65.4					22.6
W79	432850	265340	Roadside	100	76.9					23.1
W80	431710	265223	Roadside	100	75.0					25.2
W81	431840	265090	Roadside	100	100.0					16.2
W82	428854	264601	Roadside	100	100.0					20.0

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

Diffusion tube data has been bias adjusted.

Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.

Notes:

The annual mean concentrations are presented as $\mu\text{g}/\text{m}^3$.

Exceedances of the NO₂ annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.1 – Trends in Annual Mean NO₂ Concentrations: Leamington Spa

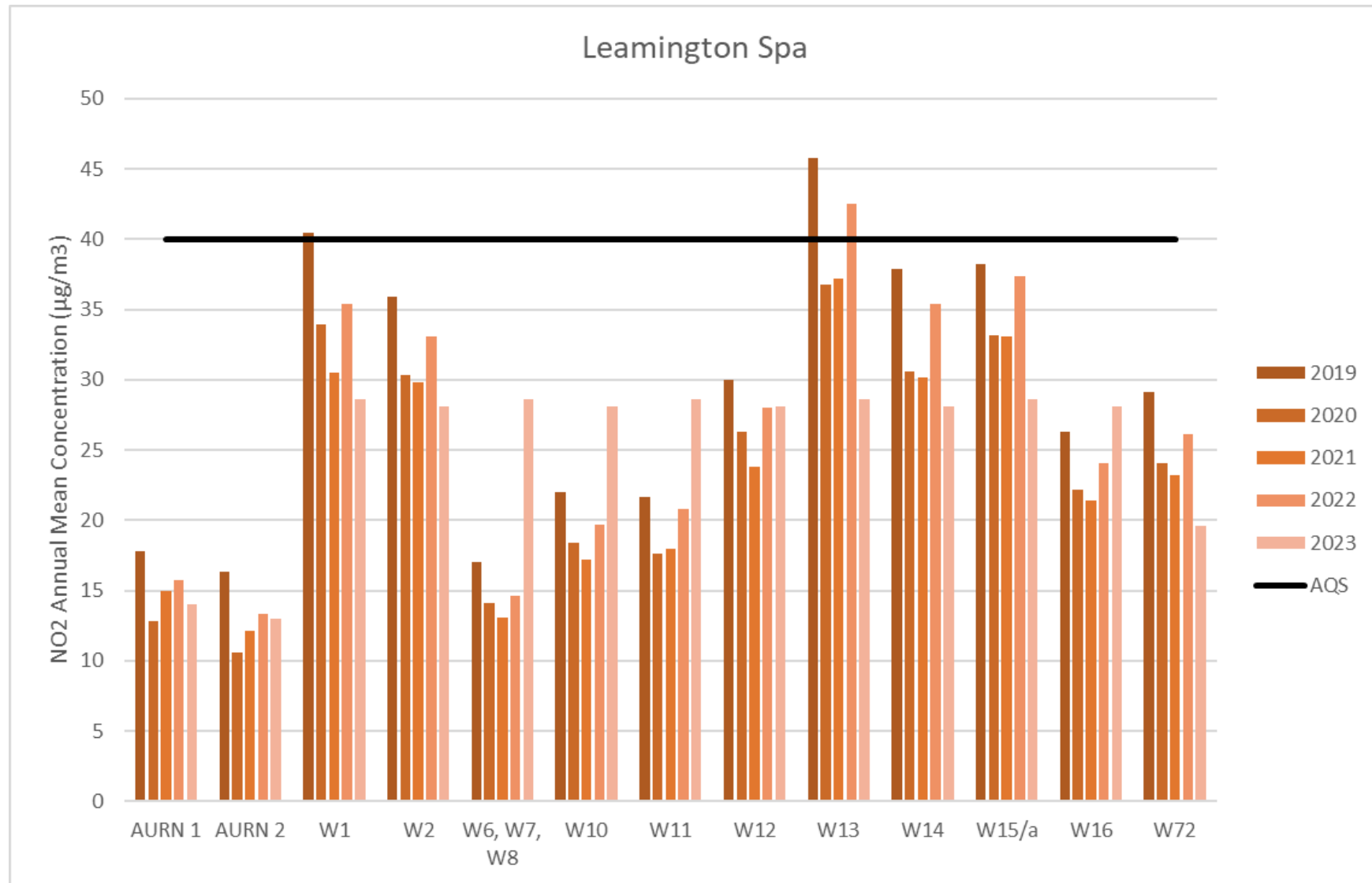


Figure A.2 - Trends in Annual Mean NO₂ Concentrations: Warwick

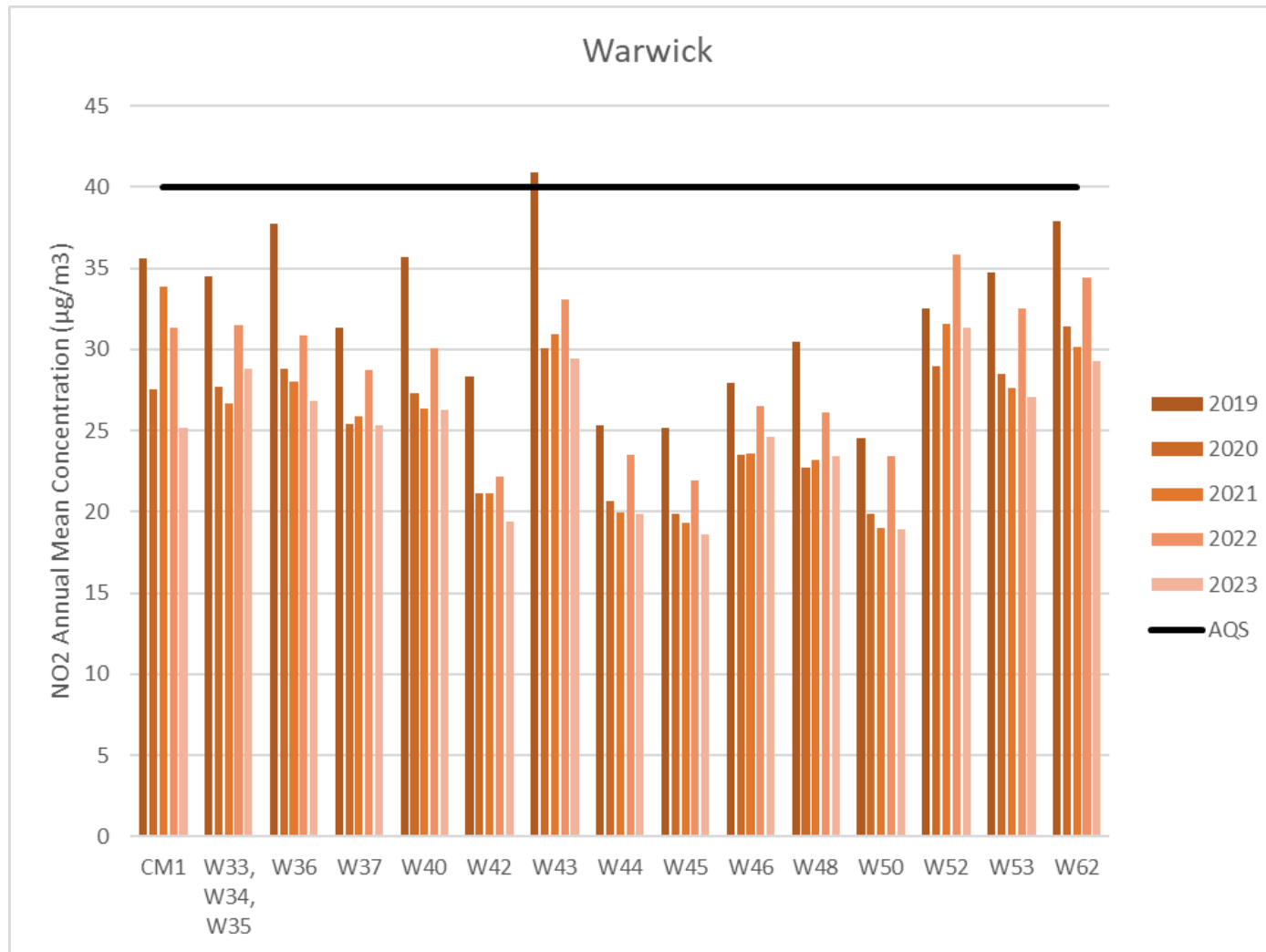


Figure A.3 - Trends in Annual Mean NO₂ Concentrations: Outside Warwick AQMA

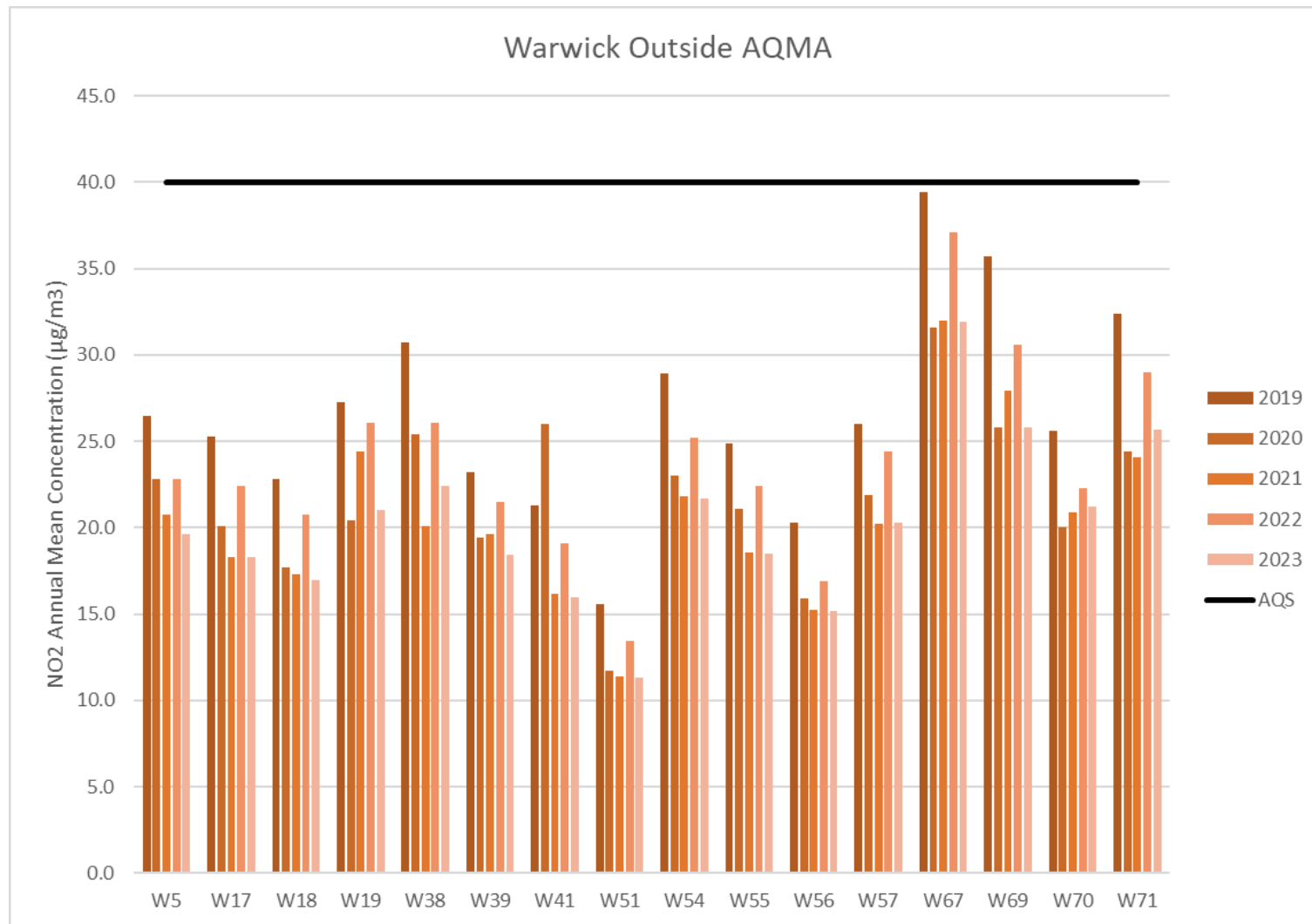


Figure A.4 - Trends in Annual Mean NO₂ Concentrations: Kenilworth and Stoneleigh

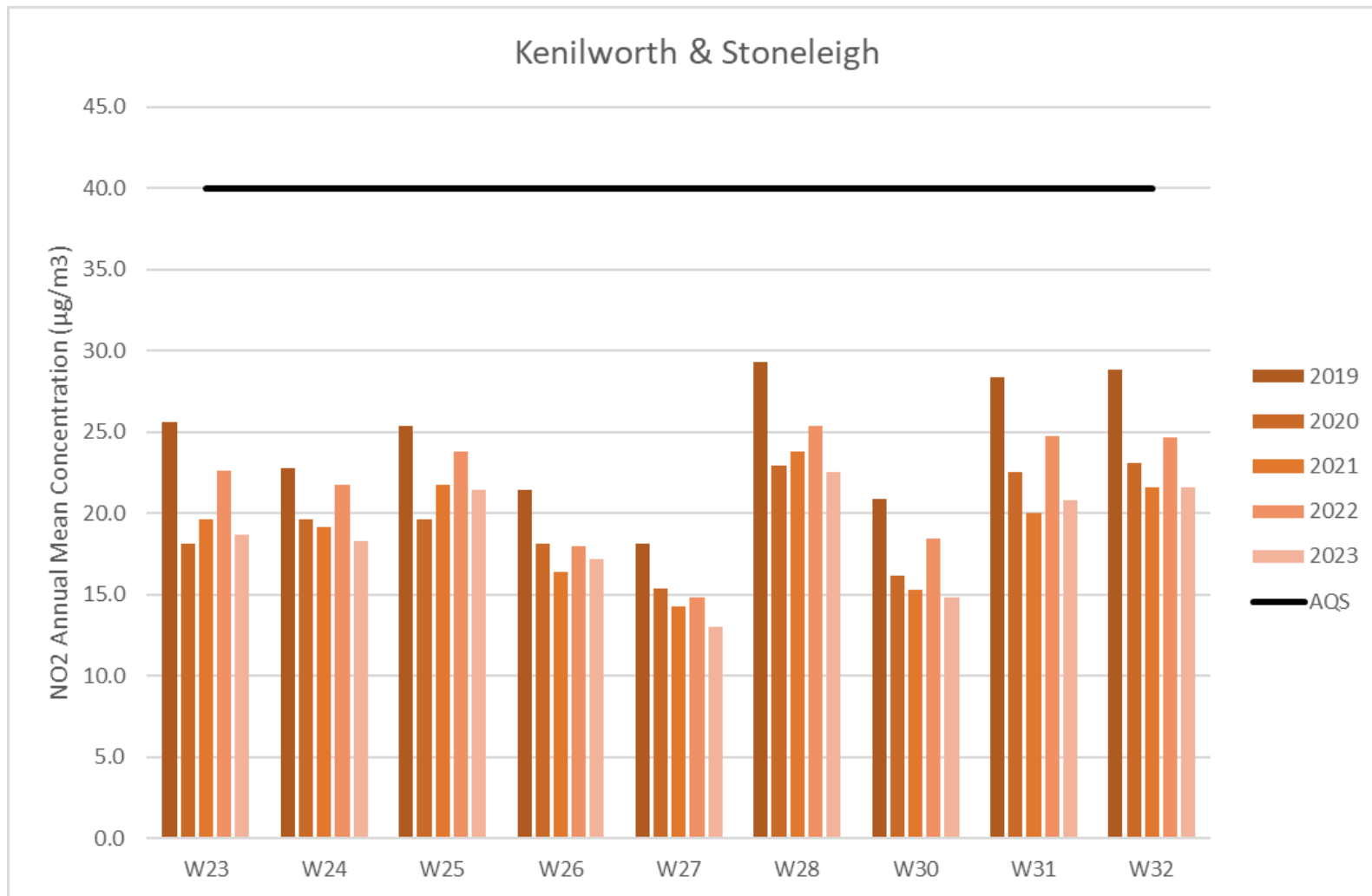


Figure A.5 - Trends in Annual Mean NO₂ Concentrations: Emscote

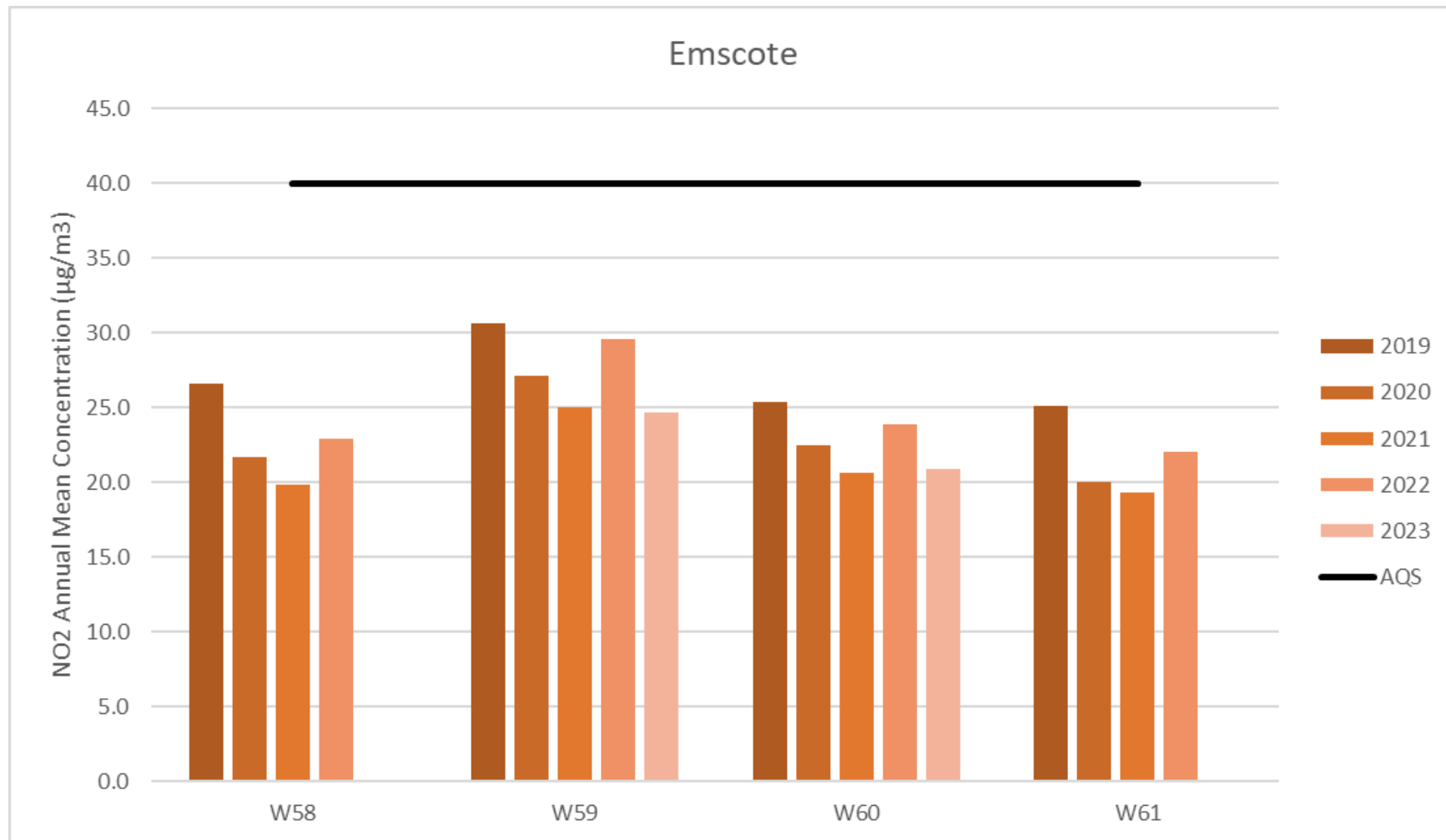


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
AURN1	431943	265730	Urban Background	99	99	0	0	0	0	13.69(0)
AURN2	431271	266404	Roadside	93	93	0	0	0	0	12.61(0)
CM1	428263	264877	Roadside	99.6	99.6	25	1	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.6 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
AURN1	431943	265730	Urban Background	100	100	13.4	11	11.2	12.8	11
AURN2	431271	266404	Roadside	99	99	14.4	11.5	10.3	11.3	10

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.6 – Trends in Annual Mean PM₁₀ Concentrations

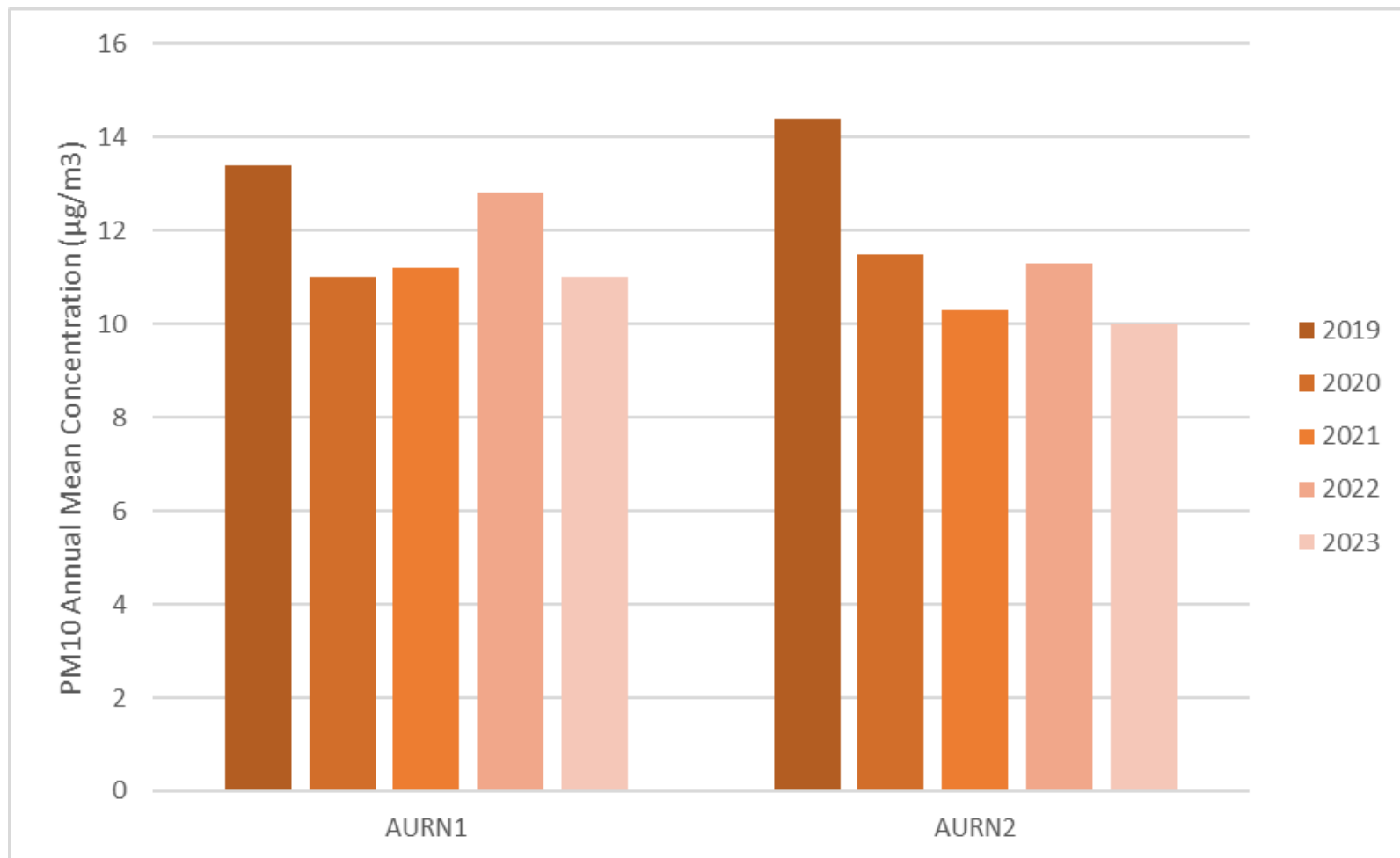


Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
AURN1	431943	265730	Urban Background	100	100	3	0	0	0	0
AURN2	431271	266404	Roadside	99	99	4	0	0	0	0

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m³ have been recorded.

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.8 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2023 (%) ⁽²⁾	2019	2020	2021	2022	2023
AURN1	431943	265730	Urban Background	100	100	9.2	6.5	7.4	7.6	7.0
AURN2	431271	266404	Roadside	99	99	9.8	6.9	6.7	7.3	7.0

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

Notes:

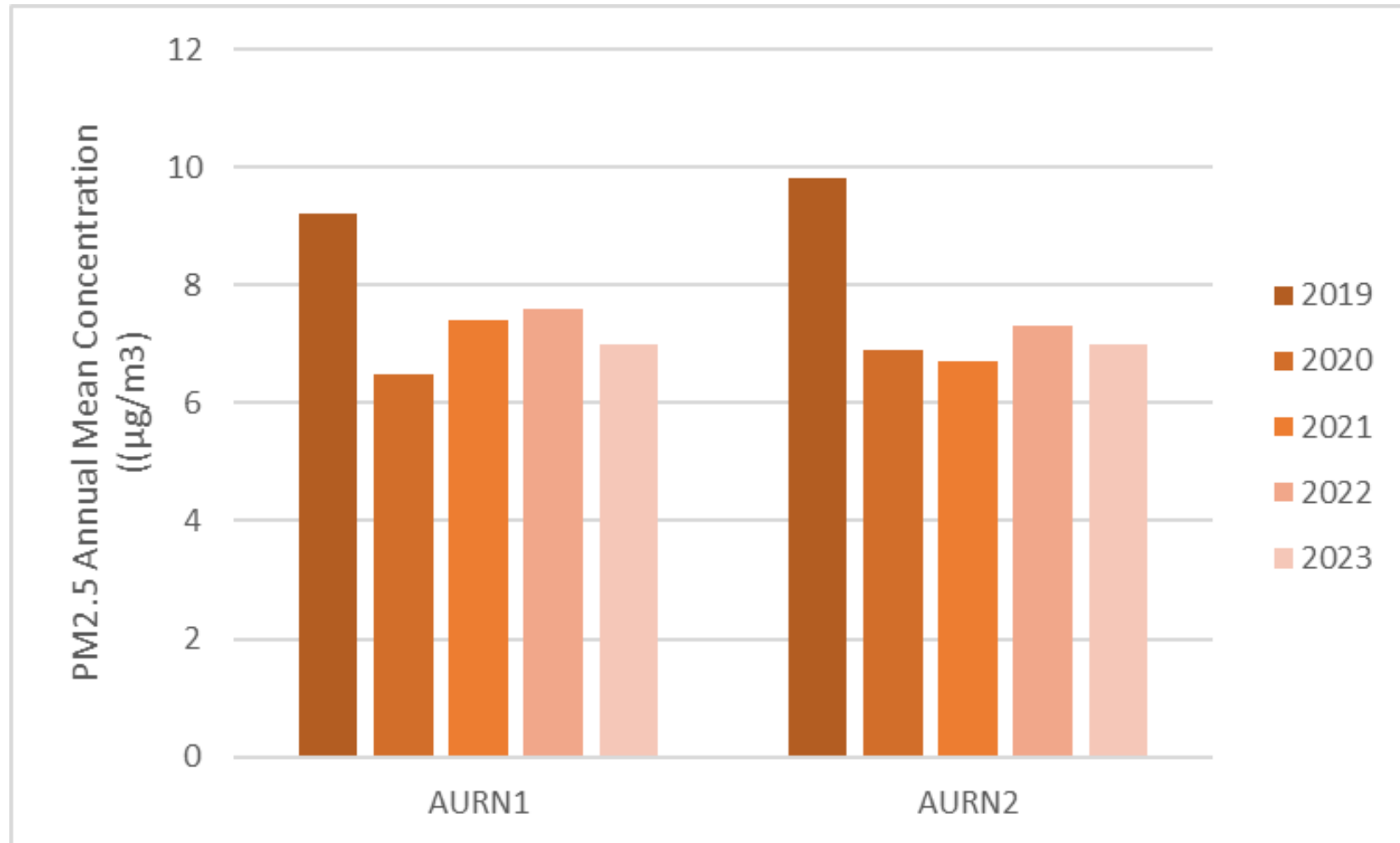
The annual mean concentrations are presented as µg/m³.

All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Figure A.8 – Trends in Annual Mean PM_{2.5} Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO₂ 2023 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
W1	431978	265280	40.7	41.4	33.6	21.8	25.3	27.0	30.5	29.4	41.3				32.3	28.6		
W2	432075	265234	39.0	37.3	28.7	30.7	25.8	25.7	25.8	31.3	35.2	34.6	38.1	28.9	31.8	28.1		
W5	427615	264563	25.8	26.8	20.7	21.0	19.1	17.6	15.8	19.1	25.9	25.2	30.3	18.9	22.2	19.6		
W6	431943	265730	21.1	19.2	14.1	11.9	8.9	8.1	9.2	9.4	13.7	15.8	21.8	15.9	-	-		Triplicate Site with W6, W7 and W8 - Annual data provided for W8 only
W7	431943	265730	21.3	18.2	14.8	11.8	8.9	7.8	9.8	9.6	13.3	16.4	19.3	15.6	-	-		Triplicate Site with W6, W7 and W8 - Annual data provided for W8 only
W8	431943	265730	22.0	20.3	14.8	12.2	8.8	8.5	9.2	10.1	14.2	15.8	22.3	15.6	14.2	12.5		Triplicate Site with W6, W7 and W8 - Annual data provided for W8 only
W10	432560	265254	26.6	23.3	18.2	16.0	13.9	14.5	11.8	14.7	18.6	22.2	24.5	18.8	18.6	16.5		
W11	432051	265060	22.6	21.9	19.1	16.3	16.5	16.0	11.0	13.7	18.7	20.4	24.8	15.0	18.0	15.9		
W12	431866	265371	33.6	34.2	27.6	29.5	14.9	18.6	23.3	24.0	31.1	32.6	35.8	28.6	27.8	24.6		
W13	431900	265189	46.0	45.8	40.1	34.4	32.9	41.5	36.4	39.5	45.7	45.7	48.1	43.0	41.6	36.8		
W14	431862	265169	35.9	39.3	32.0	31.1	26.4		28.4	33.2	34.9	33.2	44.4	33.6	33.9	30.0		
W15a	431849	265193	42.3	42.7	34.4	34.0	28.4	32.0	34.2	30.1	42.1	41.2	42.3	38.7	36.9	32.6		
W16	431951	265397	28.3	30.1	19.0	17.7	16.7	18.7	18.9	20.6	26.0	25.7	26.2	23.1	22.6	20.0		
W17	428704	265236	26.0	26.1	22.2	19.7	19.1	17.3	12.9	16.5	21.9	19.7	26.7	20.1	20.7	18.3		
W18	428735	265362	22.0	22.9	19.0	18.8	16.5		11.8	16.7	21.9	21.6	24.0	15.9	19.2	17.0		
W19	427937	264586	29.1	31.3	21.4	22.2	20.1	17.4	18.5	20.9	25.3	26.0	30.1	21.9	23.7	21.0		
W23	429078	271207	25.7	29.5	23.5	19.4	15.8	14.9	15.4	16.2	22.1	23.2	28.2	20.1	21.2	18.7		
W24	428974	271402	26.0	28.0	21.7	18.2	17.5	14.9	14.4	14.1	20.4	24.5	28.5	19.6	20.7	18.3		
W25	428707	272556	29.7		26.2	23.0	23.2	22.1	15.5	18.7	24.3	31.8	33.3	18.4	24.2	21.4		
W26	428733	272578	25.1	28.5	18.8	15.3	12.6	14.0	15.0	13.9	18.6	23.4	27.0	20.4	19.4	17.2		
W27	428750	272612		19.6	15.2	13.3	11.7	11.7	10.0	10.9	13.5	17.6	22.7	14.9	14.6	13.0		
W28	428652	272524	25.7	31.9	22.5	22.7	22.3	26.2		20.3	28.9	29.0	26.4	23.7	25.4	22.5		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
W30	428714	271769	20.6	21.6	18.2	14.8	12.6	11.5	11.9	13.4	17.0	20.3	22.4	17.0	16.8	14.8		
W31	428816	271618	25.9	29.9	24.8	21.7	19.0	18.2	18.1	19.5	24.9	27.6	31.4	20.7	23.5	20.8		
W32	428906	271497	27.7	30.5	24.4	23.2	26.0	22.9	14.9	20.5	24.3	28.4	31.1	18.9	24.4	21.6		
W33	428263	264877	34.5	37.5	33.9	30.4	27.2	29.3	23.5	27.5	35.2	38.0	36.8	30.8	-	-		Triplicate Site with W33, W34 and W35 - Annual data provided for W35 only
W34	428263	264877	32.6	44.4	30.9	30.7		43.8	24.4	27.0	36.4	36.5	36.6	33.3	-	-		Triplicate Site with W33, W34 and W35 - Annual data provided for W35 only
W35	428263	264877	34.9	36.2	32.5	32.2	24.0	28.6	25.0	27.5	35.7	37.9	37.3	33.1	32.5	28.8		Triplicate Site with W33, W34 and W35 - Annual data provided for W35 only
W36	428391	264966	35.2	37.8	30.1	34.5	24.7	24.2	20.9	26.3	30.6	31.3	35.9	32.1	30.3	26.8		
W37	428132	264799	33.5	37.5	26.9	26.6	27.4	25.8	20.6	24.6	28.7	35.3	33.4	23.4	28.6	25.3		
W38	427959	264624	30.1	32.5	25.1	23.6	26.7	23.7	18.2	22.8	27.3	26.0	26.8	21.5	25.4	22.4		
W39	427910	264541	26.1	27.6	21.3	19.3	19.5	15.4	15.1	18.1	21.9	23.8	23.9	17.7	20.8	18.4		
W40	427992	264695		34.6	31.5	27.4	22.9	25.2	25.4	26.9	34.6	34.2	36.0	28.3	29.7	26.3		
W41	427905	264682	21.6	22.9	17.1	16.7	14.9	13.4		14.0	I/S	19.3	24.7	16.3	18.1	16.0		
W42	427938	264947	24.3	28.8	21.8	23.9	18.5	17.9	13.0	18.0	24.6	26.0	28.4	17.3	21.9	19.4		
W43	428026	265158	36.3	39.3	32.3	32.2	34.8	31.0	25.7	32.4	39.6	37.7	31.7	26.0	33.3	29.4		
W44	427930	265200	25.4	27.6	23.1	21.2	17.4	18.2	17.5	19.6	26.0	26.0	28.0	19.9	22.5	19.9		
W45	427867	265275	25.5	26.3	21.2	21.6	14.8	16.9	14.3	18.4	23.9	24.5	25.4	19.4	21.0	18.6		
W46	428240	265088	31.3	I/S	I/S	I/S	31.8	36.1	17.3	21.6	29.7	29.1	33.0	20.7	27.8	24.6		
W48	428522	265039	34.5	33.6	27.3	22.4	17.6	21.1	19.8	22.0	25.4	30.2	35.1	28.0	26.4	23.4		
W50	428600	264983	26.7	26.3	20.8	20.0	19.1	19.8	13.8	17.0	22.0	22.8	25.8	22.6	21.4	18.9		
W51	428270	264982	17.6	17.9	12.3	11.0	10.3	9.3	6.8	8.9	12.3	15.0	17.7	14.1	12.8	11.3		
W52	428710	265165	33.6	42.6	34.7	34.9	38.7		25.2	32.6	40.8	36.1	40.5	29.2	35.4	31.3		
W53	428715	265202	29.5	33.8	30.1	37.0		31.1	20.6	28.4	36.6	32.1		27.1	30.6	27.1		
W54	428715	265285		30.6	25.8	24.5	24.0	22.0	16.7	19.9	26.3	25.7	29.2	24.6	24.5	21.7		
W55	428710	265341	21.9	26.0	19.9	20.0	19.9	17.7	14.9	18.1	23.4	23.4	27.7	17.3	20.9	18.5		
W56	428619	265113	21.0	23.2	16.1	14.7	15.1	13.1	10.3	13.8	17.3	19.7	24.5	17.3	17.2	15.2		
W57	428748	265166	26.9	27.7	21.9	23.3	20.2	18.8	16.8	20.8	23.9	24.4	26.9	23.2	22.9	20.3		

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
W59	429501	265494	35.1	34.8	27.2	24.5	22.0	23.0	22.6	23.9	31.8	31.0	31.8	27.0	27.9	24.7		
W60	430015	265718	26.5	29.8	21.9	24.5	25.0	25.6	15.2	21.1	22.5	25.2	28.1	18.6	23.7	20.9		
W62	428608	265042		40.5	33.9	34.0	31.5	31.0	24.3	31.3	37.0	32.0	35.7	33.0	33.1	29.3		
W67	428477	264939	34.0	42.7	37.3	36.4	41.5	34.8	24.1	34.7		40.8	40.3	30.0	36.1	31.9		
W69	428513	264921	33.0	38.3	29.6	29.9					40.8				34.3	25.8		
W70	428554	264870	26.7	27.3	23.9	27.4	26.1	24.9	13.6	21.6	20.6	21.6	29.7	24.5	24.0	21.2		
W71	428599	264857		33.4	26.2	30.7	29.3	28.8	21.6	27.9	31.1	28.8	34.9	27.0	29.1	25.7		
W72	431464	265903		29.9	23.1	23.2	20.9	18.8	18.2	20.5	5.3	27.7	33.3	22.7	22.1	19.6		
W74	431753	260091	36.4	39.8	33.4	32.4	28.8	29.9	28.2	28.8	35.5	35.3			32.9	29.1		
W75	431714	266269	30.6	30.8	27.2	20.7	14.2	16.6	19.1	18.0	27.6	26.9	32.4		24.0	21.2		
W76	431720	266739	29.1	29.8	22.9	21.4	18.5	20.7	15.7	17.4	28.6	28.7	31.2	19.7	23.6	20.9		
W77	432067	266283	30.5	31.0				18.2							26.6	19.9		
W78	432339	265865				19.9	18.1		22.0	21.6	27.8	25.4	30.8	23.5	23.6	22.6		
W79	432850	265340		31.3	25.7	26.1	22.5	25.2		21.4	26.5	28.4	28.0		26.1	23.1		
W80	431710	265223	36.2	35.6	30.0	24.4	25.4	21.1	23.3	26.0	33.9				28.4	25.2		
W81	431840	265090	23.0	24.9	19.6	17.1	16.7	15.8	10.4	15.1	19.6	21.1	21.2	15.3	18.3	16.2		
W82	428854	264601	27.6	28.9	23.3	19.3	18.8	18.1	17.6	21.6	25.8	24.1	29.0	17.0	22.6	20.0		

- ☒ All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.
- ☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.
- ☒ Local bias adjustment factor used.
- ☒ Where applicable, data has been distance corrected for relevant exposure in the final column.
- ☒ Warwick DC confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

New or Changed Sources Identified Within Warwick District Council During 2023

Warwick District Council has not identified any new sources relating to air quality within the reporting year of 2023.

Additional Air Quality Works Undertaken by Warwick District Council During 2023

- Carrying out campaigns for Clean Air Day 2023. Warwick District Council has been working with local action groups Clean Air for Leamington and Warwick and Clean Air (now Clean Air Warwickshire) with emphasis on vehicle anti- idling and educating schools. Clean Air Day 2024 is currently being organised.
- Warwick District Council has undertaken a detailed assessment of its AQMAs see [Appendix F: AQMA Detailed Assessment](#) for further information.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes for the year 2023 were supplied and analysed by Staffordshire Scientific Services (SSS), the tubes were prepared using the 20% Triethanolamine (TEA) in water preparation method. All results have been bias adjusted and annualised where required before being presented in Table A.4.

Staffordshire Scientific Services participates in the AIR-PT scheme which is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL).

Defra and the Devolved Administrations advise that diffusion tubes used for Local Air Quality Management should be obtained from laboratories that have demonstrated

satisfactory performance in the AIR-PT scheme. Laboratory performance in AIR-PT is also assessed by the National Physical Laboratory (NPL), alongside laboratory data from the monthly NPL Field Intercomparison Exercise carried out at Marylebone Road, central London. A laboratory is assessed and given a 'z' score. A score of 2 or less indicates satisfactory laboratory performance.

In 2023 AIR-PT results, AIR-PT AR046 (January to October 2023) SSS scored 100% satisfactory. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

Additionally, the precision of the NO₂ diffusion tubes supplied by SSS has been classified as 'good' for all observations during 2023. This precision reflects the laboratory's performance and consistency in preparing and analysing the tubes, as well as the subsequent handling of the tubes in the field. Precision summary results are available from the [LAQM website](#).

Diffusion Tube Annualisation

Annualisation was not required for any non-automatic monitoring sites. Annualisation was not required because data capture was greater than 75%.

Table C.1 shows the annualisation factors used for the 3 diffusion tubes with data capture of less than 75%.

Table C.1 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor Hamilton Terrace AURN	Annualisation Factor Rugby Road AURN	Annualisation Factor Jury Street	Annualisation Factor Coventry Allesley	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
W69	0.8398	0.8406	0.8699	0.8528	0.8508	34.3	29.2
W77	0.8506	0.7859	0.9121	0.8416	0.8476	26.6	22.5
W78	1.0762	1.1105	1.0583	1.0844	1.0823	23.6	25.6

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor

based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Warwick District Council have applied a local bias adjustment factor of 0.88 to the 2023 monitoring data. A summary of bias adjustment factors used by Warwick District Council over the past five years is presented in Table C.2.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	Local	-	0.88
2022	Local	-	0.98
2021	National	03/22	0.86
2020	Local	-	0.97
2019	Local and National – both factors had the same value	06/20	0.93

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	12	11			
Bias Factor A	0.97 (0.91 - 1.03)	0.82 (0.7 - 0.97)			
Bias Factor B	3% (-3% - 10%)	23% (3% - 42%)			
Diffusion Tube Mean (µg/m³)	14.2	32.4			
Mean CV (Precision)	3.2%	4.1%			
Automatic Mean (µg/m³)	13.7	26.5			
Data Capture	99%	100%			
Adjusted Tube Mean (µg/m³)	14 (13 - 15)	27 (23 - 31)			

Notes:

A combined local bias adjustment factor of 0.88 has been used to bias adjust the 2023 diffusion tube results.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO₂ monitoring locations within Warwick District Council required distance correction during 2023.

QA/QC of Automatic Monitoring

All automatic monitoring sites in Warwick, other than AURN2 Rugby Road, are calibrated by the Council's Local Site Operator (LSO) – AURN1 Hamilton Terrace and CM1 Jury Street/Pageant House. The QA/QC of the two Leamington Spa sites (AURN1 and AURN2) is undertaken through its status as part of the AURN and therefore conforms to AURN standards (undertaken by Ricardo-Energy and Environment), whereas WeCare4Air is responsible for data management of the non-AURN site, CM1. WeCare4Air is also responsible for the servicing and call out contract for AURN1 and CM1. The service contract for AURN2 is arranged by Bureau Veritas and Defra and is provided by Enviro Technology Services

PM₁₀ and PM_{2.5} Monitoring Adjustment

The type of PM₁₀ and PM_{2.5} monitor(s) utilised within Warwick District Council do not require the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within Warwick District Council recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data.

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, automatic annual mean NO₂ concentrations corrected for distance are presented in Table A.3.

No automatic NO₂ monitoring locations within Warwick District Council required distance correction during 2023.

Appendix D: Map(s) of Monitoring Locations and AQMAs

Figure D.1 – Map of Non-Automatic Monitoring Sites in the Warwick AQMA

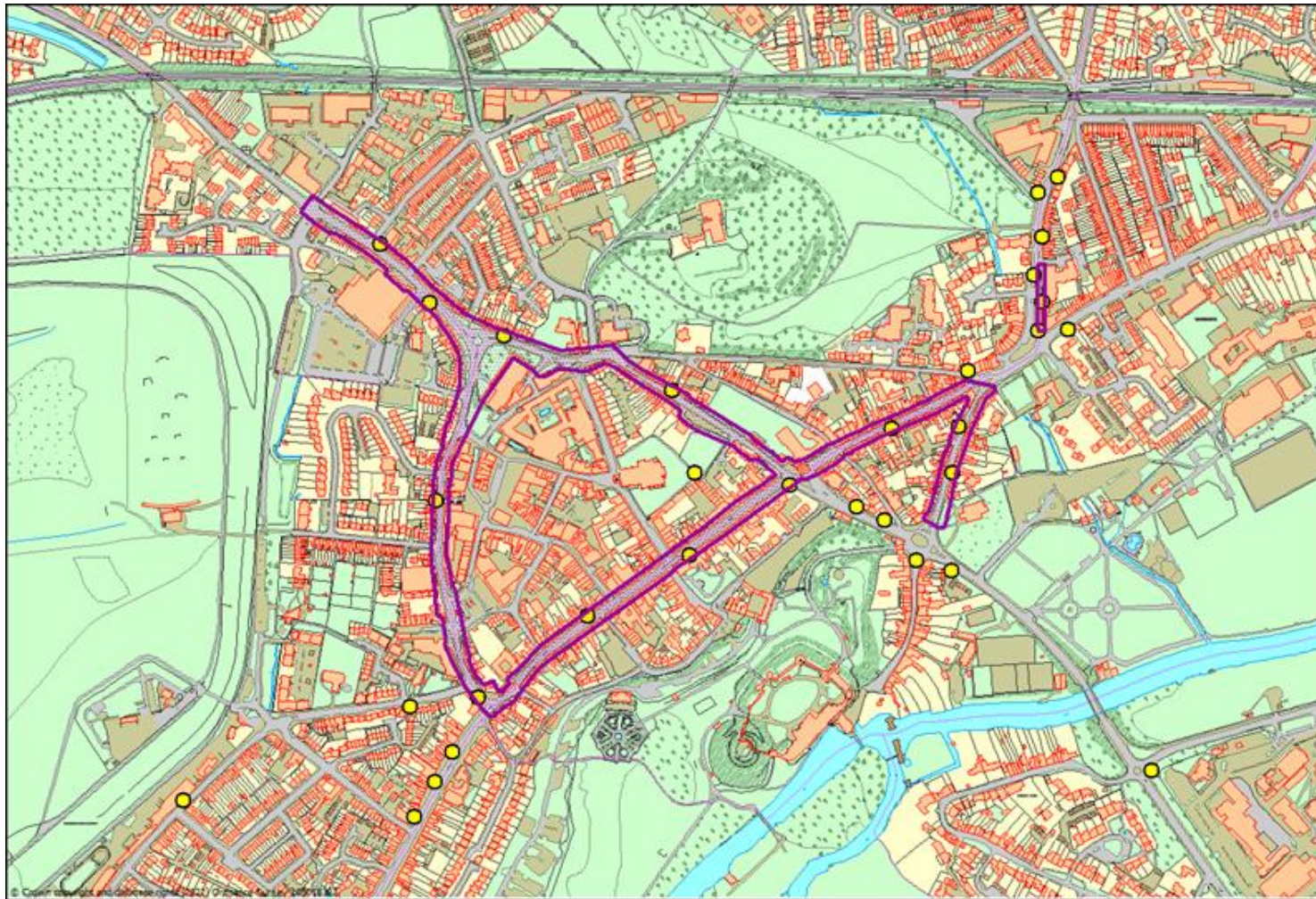
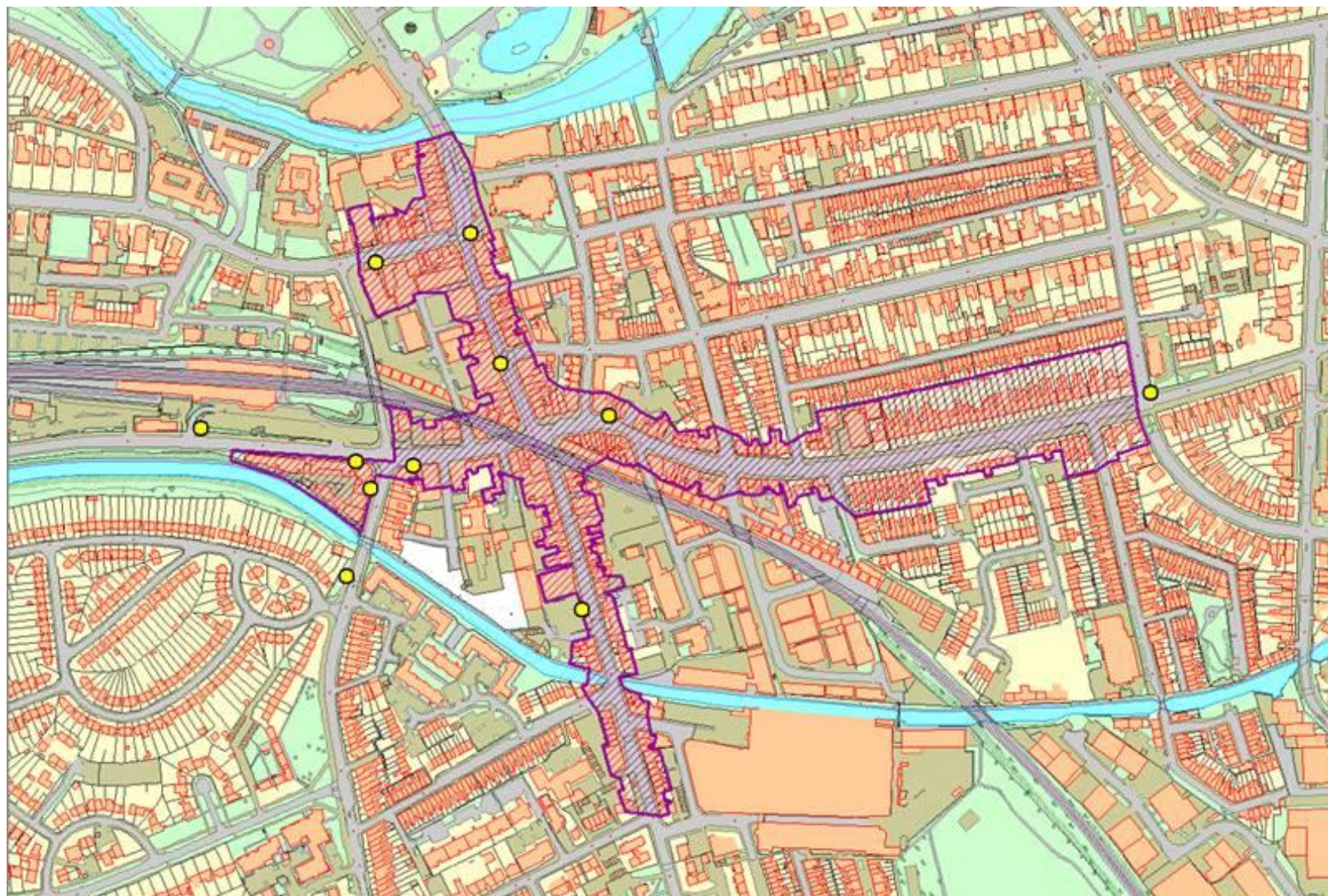


Figure D.2 - Map of Non-Automatic Monitoring Sites in the Leamington AQMA



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO ₂)	200µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO ₂)	40µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM ₁₀)	40µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO ₂)	125µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO ₂)	266µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Appendix F: AQMA Detailed Assessment

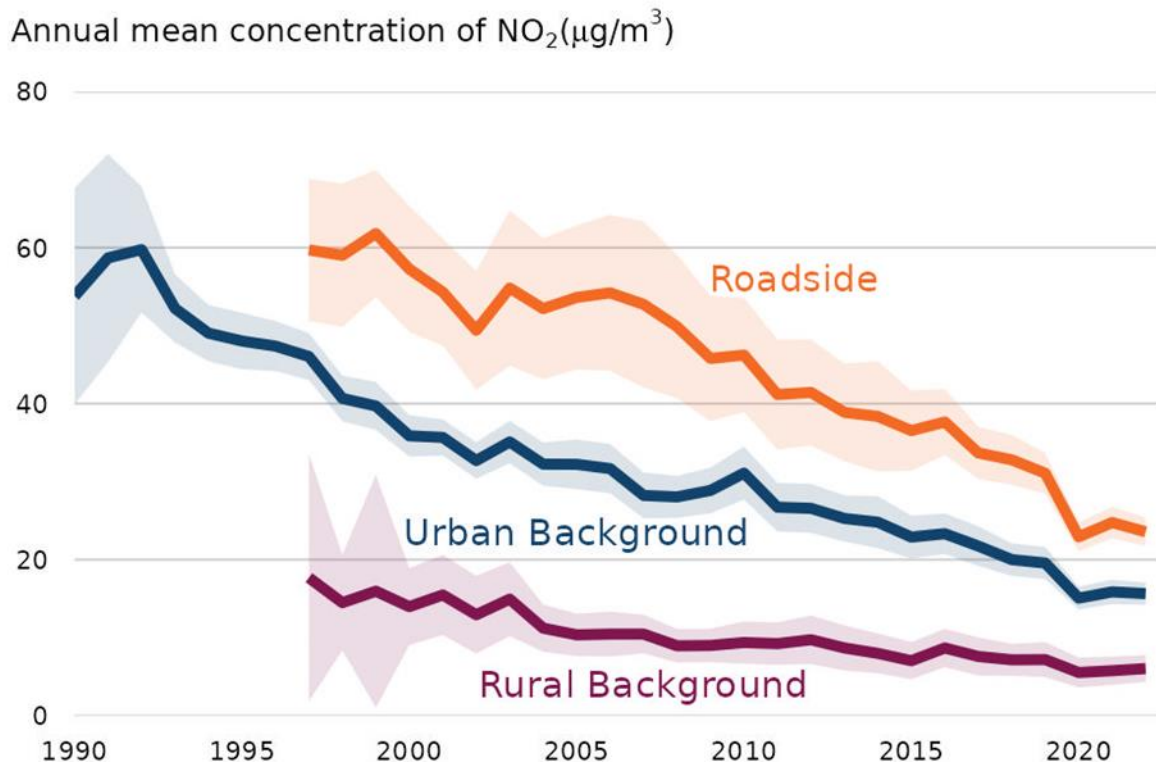
Revocation of an AQMA

The revocation of an AQMA should be considered following three consecutive years of compliance with the relevant objective as evidenced through monitoring. Where NO₂ monitoring is completed using diffusion tubes, to account for the inherent uncertainty associated with the monitoring method, it is recommended that revocation of an AQMA should be considered following three consecutive years of annual mean NO₂ concentrations being lower than 36µg/m³ (i.e. within 10% of the annual mean NO₂ objective). There should not be any declared AQMAs for which compliance with the relevant objective has been achieved for a consecutive five-year period.

National trends in NO₂

National trends

The NO₂ index shows the annual mean, averaged over all included sites that had annual data capture greater than or equal to 75%. The shaded areas represent the 95% confidence interval for the annual mean concentration for roadside sites, urban background sites and rural background sites. The intervals narrow over time because of an increase in the number of monitoring sites and a reduction in the variation between annual means at monitoring sites for NO₂.



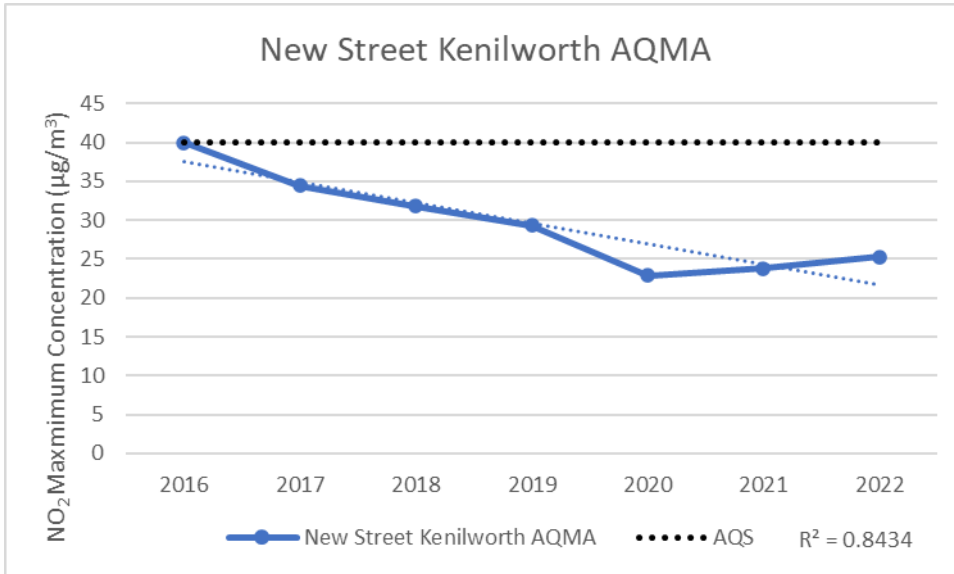
Methodology of evaluation

AQMA	2016	2017	2018	2019	2020	2021	2022
Warwick Coventry Road	44	46.4	37.4	34.7	29	31.6	35.8
Warwick Road (Kenilworth) AQMA	37.5	37.3	32	28.8	23.1	21.6	24.7
New Street Kenilworth AQMA	40	34.4	31.8	29.3	22.9	23.8	25.3
Leamington Spa AQMA	50.4	55.4	46.4	45.8	36.8	37.2	42.5
Warwick AQMA	46.6	50.2	39.8	40.9	31.4	31	34.4

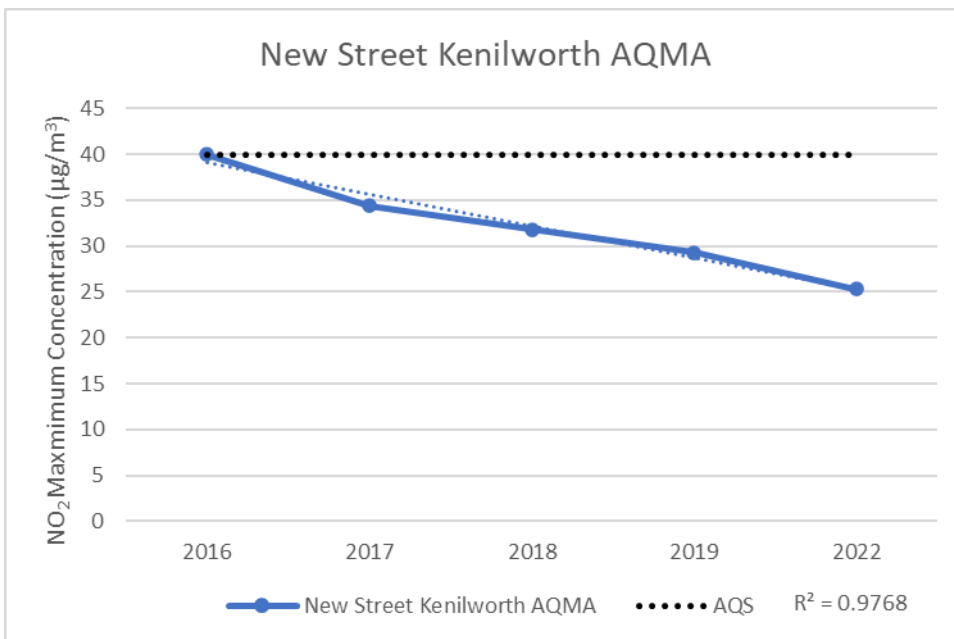
All Air Quality Management Areas (AQMAs) were initially designated based on the NO₂ annual mean objective. Notably, the Warwick AQMA received additional designation based on the NO₂ 1-hour mean, and this aspect is duly integrated into the data assessment for the Warwick AQMA. The data set comprises maximum annual NO₂ measurements for all AQMAs, providing a comprehensive overview of pollutant levels. To ensure the accuracy and reliability of data trends, the years 2016 and 2017 have been included for analysis. This inclusion is particularly pertinent as 2020 and 2021 exhibited anomalous air quality conditions attributed to the COVID-19 pandemic, thereby enhancing the overall quality of our data assessment.

New Street Kenilworth

The New Street Kenilworth Air Quality Management Area (AQMA) was officially designated in 2008. At that time, it was in compliance with the established air quality objectives, although its declaration primarily served as a precautionary measure. Since its establishment, New Street Kenilworth has consistently adhered to Air Quality objectives. Projections indicate a robust correlation suggesting a sustained decline in the maximum concentration within this AQMA. The likelihood of future exceedances of air quality standards is minimal, given the positive trend. Consequently, there is a compelling rationale for considering the revocation of this AQMA, as it no longer presents a significant air quality concern to warrant its continued designation.

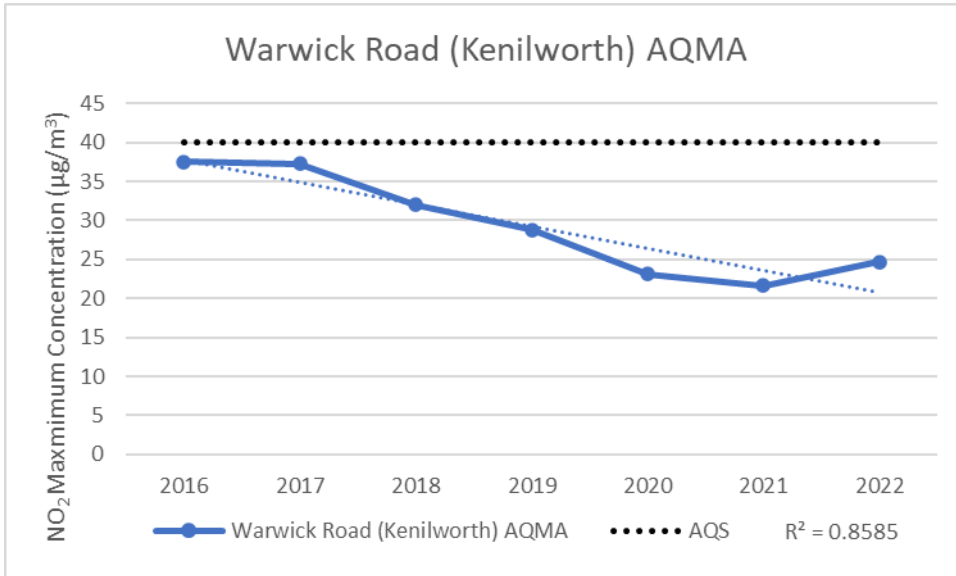


Removing the years 2020 and 2021 as outliers due to the COVID-19 Pandemic’s influence on travel shows an even stronger trend in reduction.

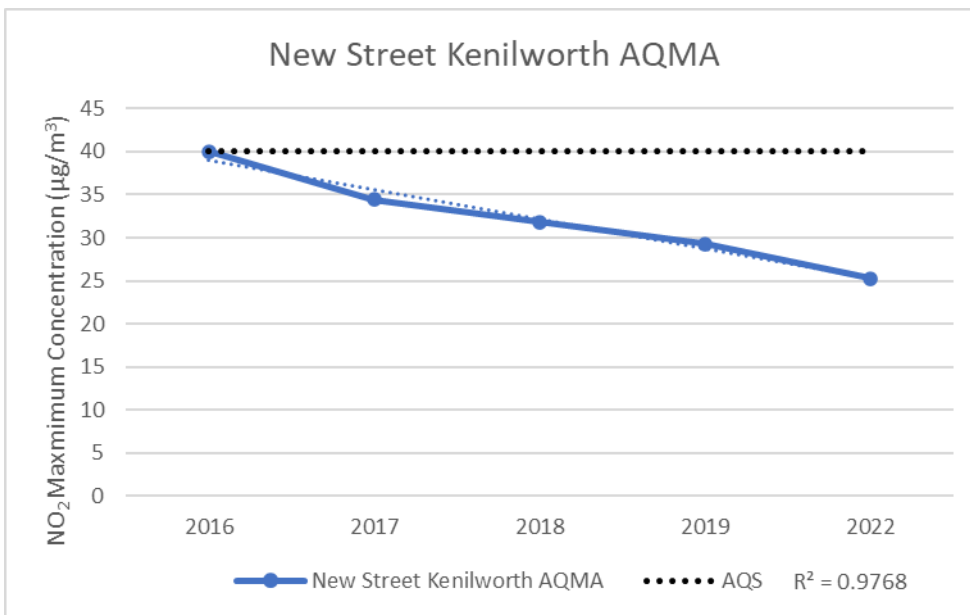


Warwick Road Kenilworth

Warwick Road Kenilworth has consistently maintained compliance with Air Quality objectives for a period exceeding five years. An evident and robust correlation indicates that the maximum concentration within this Air Quality Management Area (AQMA) is likely to continue its downward trend. The prospects of future exceedances of air quality standards appear highly improbable.

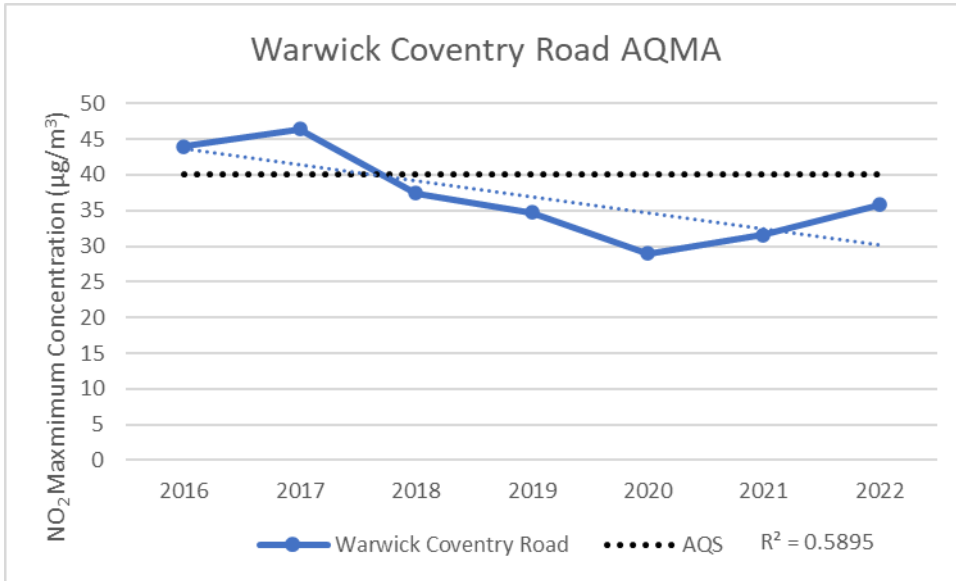


Removing the years 2020 and 2021 as outliers due to the COVID-19 Pandemic’s influence on travel shows an even stronger trend in reduction.

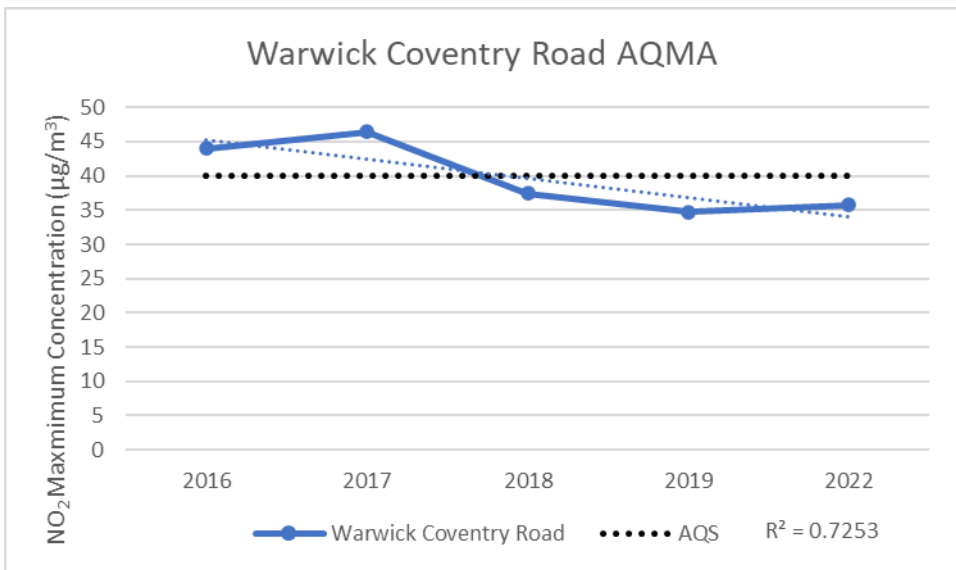


Warwick Coventry

The site under review has demonstrated consistent compliance with Air Quality objectives for a consecutive period of five years. Projections indicate a moderate correlation, suggesting a potential ongoing decrease in the maximum concentration within this Air Quality Management Area (AQMA). Forecasts indicate that exceeding air quality standards in the foreseeable future is improbable. Considering these trends, it is advisable to revoking the AQMA designation, given the sustained improvement and consistent performance below the air quality standard over the past five years.



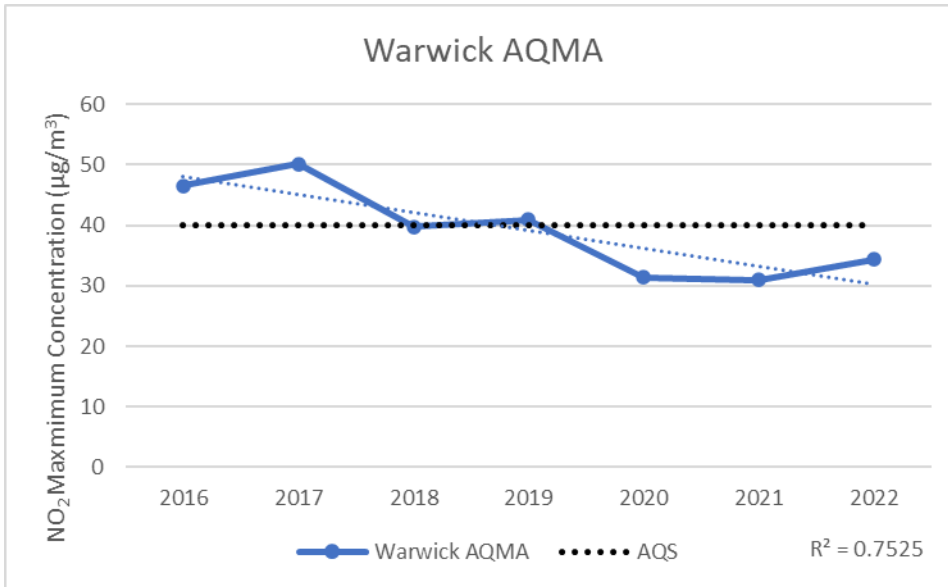
Removing the years 2020 and 2021 as outliers due to the COVID-19 Pandemic's influence on travel shows an even stronger trend in reduction.



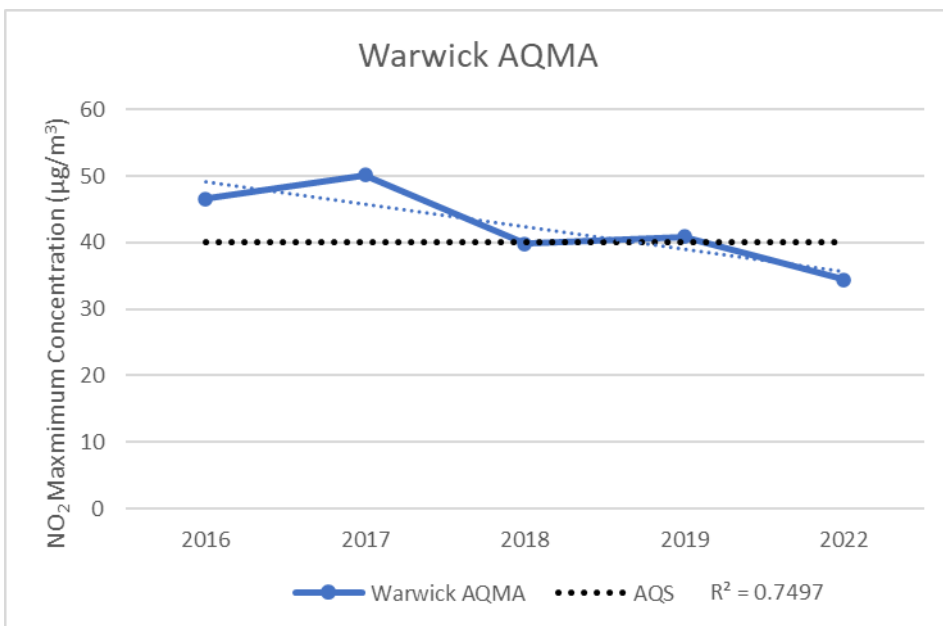
Warwick AQMA

This site has maintained compliance with Air Quality objectives for a continuous period of three years. Projections indicate a strong correlation, suggesting a persistent decline in the maximum concentration within this Air Quality Management Area (AQMA). The likelihood of future exceedances of air quality standards is notably low.

Considering the positive trend and to potentially streamline administrative processes, it is advisable to consider the possibility of revoking the AQMA designation, despite the relatively short compliance duration of three years. However, if revocation is not pursued, an annual reassessment will be necessary to monitor and ensure ongoing compliance.



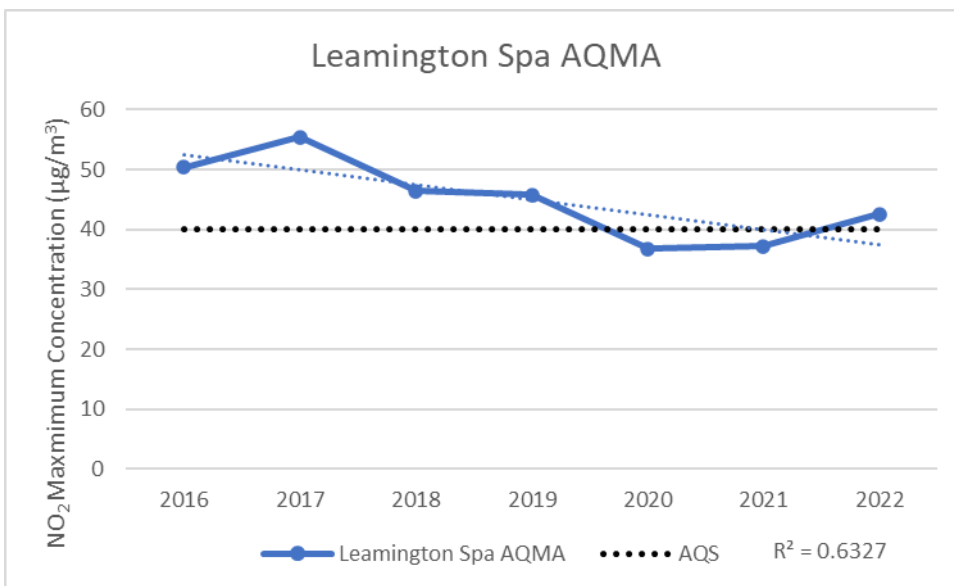
Removing the years 2020 and 2021 as outliers due to the COVID-19 Pandemic's influence on travel shows negligible change in trend.



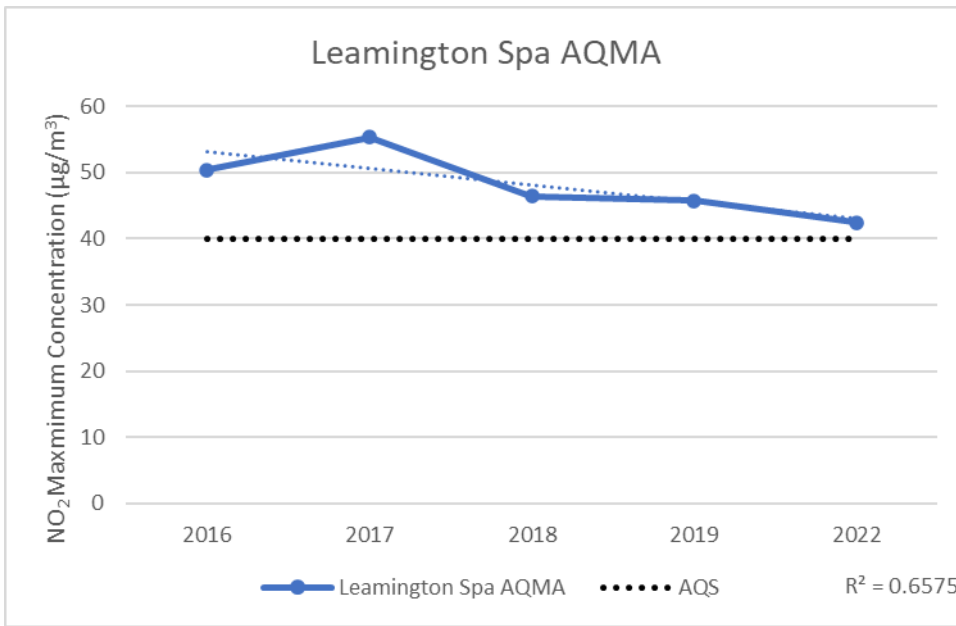
Reviewing the 1 hour mean objective in 2019 There were 25 1-hour concentrations that were greater than the hourly NO₂ limit of 200µg/m³ at the Jury Street/Pageant House continuous monitoring location. Since then, it has been compliant with the air quality standard of no more than 18 exceedances.

Leamington Spa AQMA

The status of this site reveals non-compliance with Air Quality objectives. Projections indicate a robust correlation, suggesting a promising trend of declining maximum concentration within this Air Quality Management Area (AQMA). However, it is essential to underscore that revocation should not be considered for this site at this time, given its ongoing non-compliance with air quality standards. Vigilance and remedial actions should continue until compliance is achieved and consistently maintained.



Removing the years 2020 and 2021 as outliers due to the COVID-19 Pandemic's influence on travel shows negligible change in trend.



Conclusion

Revocation of the following AQMA's: New Street Kenilworth AQMA, Warwick Road Kenilworth AQMA should be undertaken.

Warwick AQMA has been compliant for three years based on the annual average and 1-hour mean air quality objectives. Projections indicate continued decline in concentrations of both objectives. Another assessment is recommended for the following year.

Leamington Spa AQMA should remain due to non-compliance with the air quality standards.

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO ₂	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
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